

# THE IRON AGE

A Review of the Hardware, Metal Trades.

Published every Thursday Morning by David Williams Co.,

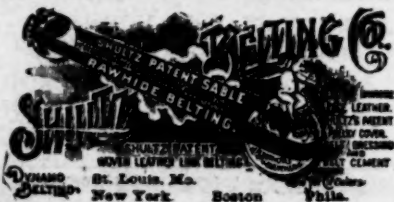
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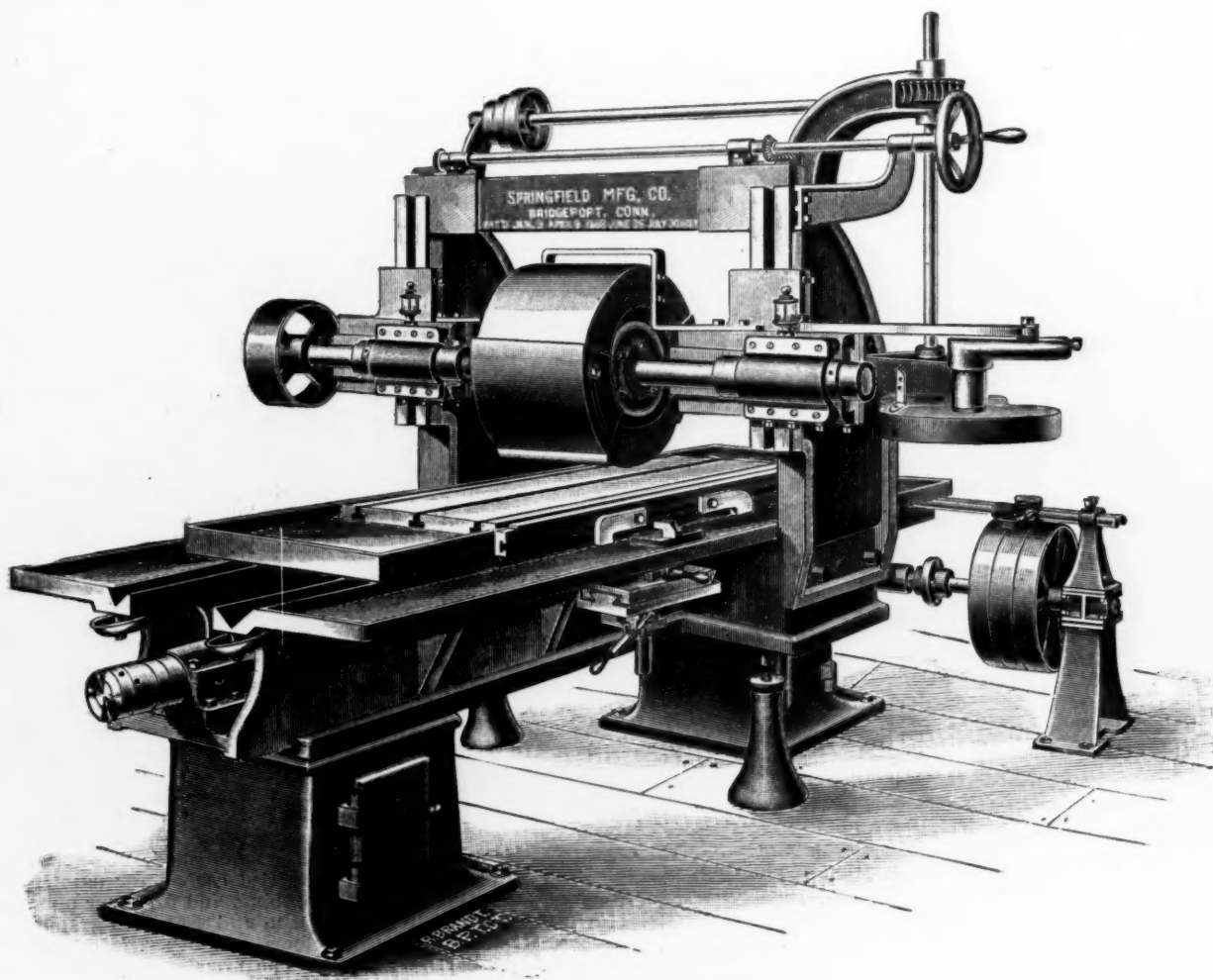
THURSDAY, FEBRUARY 9, 1899.

## The Springfield Oscillating Surfacer.

The Springfield Mfg. Company, Bridgeport, Conn., have designed the machine illustrated for the purpose of surfacing rapidly and accurately large surfaces. In many ways the construction is similar to that of an iron planer, with the necessary changes to make it better adapted for accuracy and the use of water. The bed and platen are arranged so that water is used, conducted to a receptacle, and forced back over the wheel by a pump. Proper care is taken to prevent water or emery grit from getting into the mechanical parts. The platen

may require. The emery wheel is 20 inches diameter, 2 inches face; the spindle is  $2\frac{3}{4}$  inches diameter, and the boxes are 10 inches long. The machine is made in several sizes, to take in work from 14 to 40 inches wide and from 4 to 18 feet long. The machine is equipped with an automatic idler which takes up automatically the belt carrying the emery wheel when thick work is on the platen.

Manifold printing by means of Roentgen rays, suggested by Prof. Elihu Thomson in 1896, and further elab-



THE SPRINGFIELD OSCILLATING SURFACER

is driven with a screw in connection with a worm and worm gear, and a very even motion is thus transmitted, which assists in producing an even face. This, in connection with a special and new feature in the way of an oscillating emery wheel and spindle, which is so constructed that by one full turn of the platen the entire surface comes in contact with or in under the emery wheel, produces a much more even surface than can be obtained by a ratchet feed, with which it is necessary to make calculation for the slight wear of the wheel which occurs when large surfaces are ground. Oscillating the wheel also keeps the wheel in a true condition. Oscillation is obtained by the boxes and spindle carrying the emery wheel, slid on specially constructed ways and connected by a rod to a cam wheel which gives the side motion of the wheel a long or short stroke, as occasion

orated in Europe, is explained by Dr. F. S. Kolle in the *Electrical Engineer*. The process proposes to eliminate composition and presswork and to substitute blocks of 100 sheets of sensitized paper capped by the copy sheet, either written or printed, in opaque ink. It is claimed that 20 seconds' exposure to the X-rays transfers the copy to the sheets, which are then developed and washed. Twenty such blocks can be exposed at one time about a single tube; and Dr. Kolle estimates an output of 6000 sheets per minute for each tube; or ten men working eight hours per day can turn out 7,500,000 copies, and develop, fix, wash and dry them. Small cost is claimed.

A Danish company have secured a concession for all the electrical undertakings at Bangkok, Siam, and propose erecting extensive works in that city.

### Lake Iron Ore Matters.

DULUTH, February 2, 1899.—The statement, telegraphed over the country, that the ore agents had sold the 1899 product in a week, while probably somewhat exaggerated, is the best possible index of the conditions surrounding the trade for the coming year, conditions that have been pointed out in this column for some time. It is evident enough that the ore business for the year will be limited only by the capacity of the mines, the transportation and the available labor. The latter question is made more complex by the recently announced advance given miners in the copper district of Michigan, where an unsolicited raise of 10 per cent. is said to have been made. The iron mines, despite the demand for their product and the agreed advance in price for the year, are in no condition to come up to this new level. They are paying wages now that bring the miners nearly \$3 a day if not fully that in many cases. The immediate and enormous sales made at once after the announcement of prices for the year are a sufficient indication that the consuming interests look for higher prices and are anxious to contract as much of their supply at the present rates as they can. There will probably be a scramble later for ores that are not taken now, and in this the non-Bessemer and Mesabas are likely to have their innings.

On the Menominee range the old Monitor Mine, at Crystal Falls, is being unwatered as fast as may be. In Great Western three bailers are hoisting water at the rate of 1000 gallons each, and two pumps are also working. Curry of the Penn Iron Company is also being pumped out and will have a large crew of men underground very soon. Cundy, owned by Illinois Steel interests, is getting ready for a large output. So far in its brief career the mine has never done what it might, and an output of 150,000 tons this year is quite within the probabilities. At Aragon a large amount of dead work is under way, and the mine will be a large shipper, probably considerably surpassing 300,000 tons. The Menominee will show up for the year with a surprisingly heavy increase over any year in its history. Probably no range is doing more in the way of explorations and developments in abandoned properties.

Something new in mining on Lake Superior is being undertaken at Champion, Marquette range. There manager Pitch is twisting his main shaft No. 7, and at the nineteenth level, 1050 feet underground, he is changing its face from a bearing of 17 degrees west of north to one of 62 degrees west. This twist will be made in a distance of 175 feet, and the turn is estimated to give an easy operation for the skips. By this unusual method the ore will be followed by the shaft and the necessity of a new shaft done away with. Of course, there have been a good many twisted shafts in the Lake region, but they have been involuntary and a cause of tribulation when discovered. Champion is the deepest mine in the Lake region, having followed the ore to a vertical depth of 1500 feet, and it is interesting in many ways. One feature of its product at the present time is most worthy of remark, being magnetic ore masses that are used in the manufacture of chlorine. These masses are sent to New York, where they are cut into slabs of about 1.5 inches thick and a foot square. There can be no fractures in the slabs, and for that reason their mining is attended with the greatest care, no blasting being possible. These slabs are used as anodes for the securing of chlorine for wood pulp manufacture, and are decidedly preferable to platinum plates, lasting many times as long and possessing a better conductivity. The ore is very hard and is cut with difficulty by smooth steel saws bearing on filings and sand. Ore suitable for the purpose is found nowhere else in the United States, and outside only in Russia, and there of an inferior quality. The stopes of the Champion are increasing in size, and the mine looks better than at any time since resumption. Drill exploration is to begin soon in ground said by the United States Geological Survey to be possibly of value. This ground lies in the direction of the Michigamme Mine strike.

On the Mesaba range the event of the week has been the sale of all the stock of the Security Land & Exploration Company to an Eastern mineral company at about \$300,000, par being \$100,000. The Security have an interesting history. Their lands, consisting of 3600 acres of unexplored ground, well located, were bought by Duluth men in the spring of 1893 from a Minneapolis bank that held them under mortgage foreclosure for a net sum of \$25,000, \$30,000 of the original purchase price being returned immediately after the purchase from the sale of the timber covering the lands. The company afterward found ore on a number of their tracts and sold some 300 acres, retaining the rest. Since then they have paid dividends of \$260,000, from sales and royalties on leased lands, and now get \$300,000 for what is left. On their lands and under lease is the Sparta Mine, and a new property to be opened this year, lying between Sparta

and Genoa. Undeveloped properties are Shaw, a fine siliceous ore of considerable area; Towanda, of problematic value, and some other hoped for locations. The name of the purchaser is not announced, but can be given next week. From the fact that the attorney of the Oliver Mining Company has conducted the negotiations for the purchase, it has been surmised in some quarters that that concern were the purchasers, but it could scarcely be so unless that company had departed from their customary policy of mineral purchases.

The sale of the Wright & Davis lands to the Eastern Minnesota Road, detailed last week, has been since denied by the president of that company, Jas. J. Hill. It may be said, however, that the report was correct despite the denial, and that the purchasers will take hold in the spring. There is a general feeling among holders of mineral lands on the western portion of the Mesaba that the change in ownership is an augury of better things, and it is to be hoped they are not mistaken.

There are no changes on the Vermillion range, except those of increased activity and more explorations. At Oliver Mining Company's operations air is now furnished Savoy and Zenith Mines from Pioneer compressors, a distance of 1½ miles, and heavy work is being done at all the properties.

It seems to be assured that the Oliver Iron Mining Company, that devourer of good mines, have not secured operating control of the properties of the Queen Mining Company, at Negaunee, including the Buffalo, Queen, Prince of Wales and Blue Mines, but that another strong concern have them, under reasonable arrangements. The mines have been in the hands of Corrigan, McKinney & Co. as lessees, and there has been such a royalty, 40 cents a ton on the non-Bessemer of the Blue, that the mines have been operated but spasmodically for years. Next week the former lessees will relinquish and the buying interests will assume control unless there is some hitch in present plans. All four of the mines are to be worked at full steam, and conditions at Negaunee will be far better than ever in the past. The group of mines is easily capable of mining not under 500,000 tons a year, with present development. w.

**The Acheson Graphite Company.**—The Acheson Graphite Company have been incorporated to do business at Niagara Falls with a capital of \$1,000,000. The company are named after E. G. Acheson, the inventor of carborundum and the president of the Carborundum Company. The company will take over a series of three patents upon certain processes on which Mr. Acheson has been working for many years. His first patent was taken out in 1894 and the last a few weeks ago. The company will manufacture graphite and pure carbon. It is the company's intention to erect a plant at once on the lands of the Niagara Falls Power Company, at Niagara Falls, and to start with probably not over 500 electrical horse-power will be used. If the company can prevail upon established concerns to use their manufactured article, they will not go into the details of the business and manufacture all the articles in which graphite and carbon are used. However, if such a course is necessary, they will do so. It is understood that during the past year Mr. Acheson has supplied the Mathieson Alkali Works with all the graphitized carbon rods for their electrolytic alkali manufacturing process. In the incorporation papers the object of the company is stated to be the manufacture of graphite and carbon for paints, for foundry facings, for electrotyping, and for other purposes; to manufacture, sell, deal in and deal with graphite paints, stove polish, crucibles and other forms of graphite and carbon articles. The process will consist of the conversion of the amorphous form of graphite as found in coke to the graphitized form.

**A Large New Open Hearth Plant.**—The Lukens Iron & Steel Company, manufacturers of steel and iron plates, of Coatesville, Pa., expect, as soon as weather permits, to begin work on a new plant of ten open hearth steel furnaces of 50 tons capacity each. Possibly not more than half the number will be erected at once, but the plans contemplate the entire number, and are to embody the most modern and complete equipment, with electric cranes, &c. The Lukens Iron & Steel Company will also erect a new 48-inch universal mill, to be located near the present plant. The Lukens Works now have two 30-ton and two 35-ton acid and two 35-ton basic furnaces and three trains of rolls, one of which is a fine three-high plate mill with 120 34-inch rolls.

Señor Morla Vicuna, the Chilean Minister at Washington, has advised the Government that Chili has decided to give its support to the Bureau of American Republics. This makes the international Bureau of Republics complete for the first time since its organization in 1890.



### The Philadelphia Ring Oiling Bearings.

The Philadelphia type of bearings made by the Geo. V. Cresson Company of Philadelphia, are self oiling by means of tempered steel springs, as shown in Figs. 1 and 2. These rings distribute the oil over the entire surface of the bearing, quietly and without heating or lashing it into foam, and thereby stirring up the sediment in the bottom of the oil chamber. The surplus oil is returned to the chamber below the bearing by means of an improved dovetailed scraper, which forms part of the bearing surface and will not get out of order. The bearings are so arranged that the collars

hangers and pillow blocks are constructed on the same general principles, and the ring oiling bearings are made to interchange in any style of frame.

A dispatch states that the directors of the Georgia & Alabama Railroad Company and the Georgia & Alabama Terminal Company, at a joint meeting on the 29th ult. at Savannah, Ga., authorized President J. Skelton Williams to contract immediately for the construction of the great steel drawbridge across the Savannah River, between Savannah and Hutchinson's Island, where the company's extensive new terminals are to be located, the approximate cost being estimated at

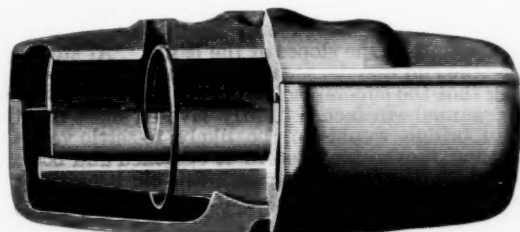


Fig. 1.

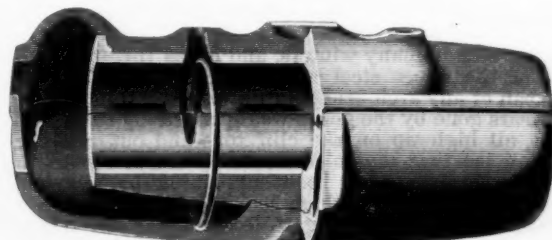


Fig. 2.

Ring Oiling Bearings.

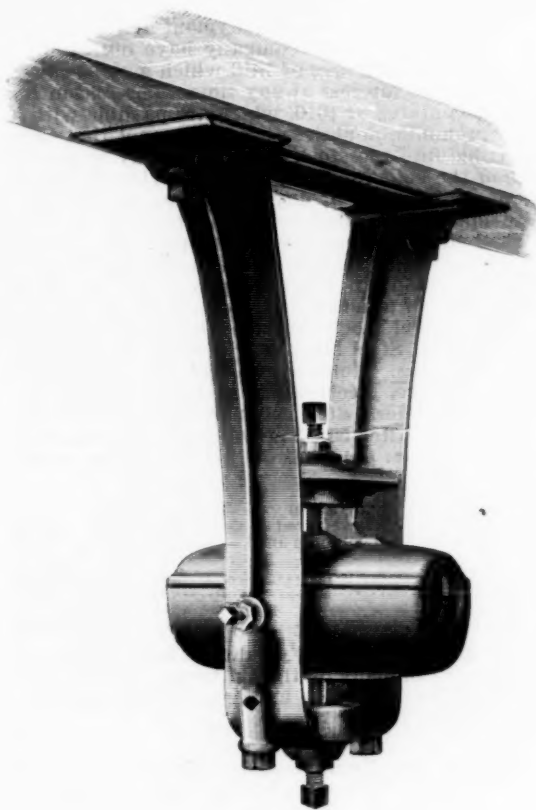


Fig. 3.



Fig. 4.

Adjustable Parting Hangers.

### THE PHILADELPHIA RING OILING BEARINGS.

for controlling the shafting are concealed and will not throw oil. There is no danger of being caught by the revolving collar. In Fig. 2 the end covering the collar is enlarged. The ends of the collar bearings are provided with covers that can be easily removed and the collar can be quickly adjusted. The bearings are babbitted and the surfaces are provided with grooves for distributing the oil. The bearings are self adjusting.

The hangers, Figs. 3 and 4, have a range or adjustment vertically of 1 inch each side of the center, and  $\frac{3}{8}$  inch horizontally each side of the center. They are made double braced and parting. The latter feature admits of the hanger being erected without taking down the shaft when it is necessary to apply additional hangers to a shaft. The main characteristic of the parting, Fig. 4, is the lock joint; with this it is impossible to slip the cap on the hanger, thus avoiding accident. Post

about \$250,000, and for the terminals and docks \$1,000,000.

On February 2 the Bethlehem Iron Company, at Bethlehem, Pa., shipped 318 tons of armor plate for the battle ship "Alabama" to the shipyard of the Wm. Cramp & Sons Ship & Engine Building Company in Philadelphia. The Bethlehem Iron Company have just finished the largest steel shaft ever made in the world. It is for the Boston Elevated Railway and weighs 170,000 pounds. It is 28 feet long and 3 feet in diameter.

James T. Mackay, 712 North Second street, St. Louis, has been appointed agent for Dietz, Schumacher & Boye, Cincinnati. A line of their machine tools, among them a double spindle lathe, is carried in stock.

### Ice Jams in Niagara Gorge.

There has been an element of danger in this year's ice bridge at Niagara that is quite unusual. With the coming of the regular January thaw high winds sweep across Lake Erie, driving the ice and water into the entrance to the Niagara River at Buffalo in great and unusual quantities. Its passage down stream occupies but a short time, and the mass of ice plunges over the falls into the gorge below. Just below the falls the river is quite wide and then it narrows again. The enormous quantities of ice passing over the falls sweep into and fill all the eddies between the falls and whirlpool rapids. The ice continues to increase in quantity, and great ledges form in the eddies, leaving a channel in the center through which all the ice must pass or a jam results. Almost every year an ice jam of great proportions follows such conditions, but this year's jam is of far greater magnitude than any Niagara has seen in many winters, and it has threatened the safety of the upper steel arch, which has the greatest main span of any arch bridge in the world.

In years gone by the gorge was spanned by suspension bridges, all high up on the cliff tops and out of danger from any ice that might form. Within a few years the suspension bridges have been supplanted by all metal arches, the upper one of which has its abutments close to the water line. All the Niagara ice bridges form in front of these abutments. The first ice bridge that formed this year came early in January. It held fast a few days, and then the pressure of the water forced it to move down stream. It was succeeded by a larger bridge, which held until the afternoon of Sunday, January 22, when at a stage of high water and a big flow of ice it broke loose while people were crossing it and started toward the whirlpool rapids. Such an incident had never been known in the ice bridge history of Niagara. All but three persons readily reached shore, but the trio referred to had a thrilling experience. One, a young man, remained quite still on the ice floe until he reached a point under the steel arch, when he was tossed by the ice piling up against the abutments, right up on the second section of the main span of the arch near the New York shore, from which point he quickly reached shore. The other two, a man and a woman, flew across the river on the moving ice to the Canadian side, where they were enabled to land by the fact that the ice again jammed.

With this movement of the ice the water in the gorge became very high. The mass of ice that came over the falls was greatly increased, and it piled up against the abutments of the steel arch until it was away out on the second section of the span, on the New York side. On the Canadian side it also piled up until the abutments were buried. The pressure appeared very great, and men were at once set to work to blast the ice away from the abutments. This they did with dynamite, but the effect was not what it would have been had the icy mass been solid. The Niagara ice bridge is formed of small cakes of ice held together by a snowy binder, and in the bridge there are many air seams. In this light mass and the air seams thereof the force of the explosive was mainly spent, the result obtained being far different from what it would have been had the ice been more solid.

One feature on the New York side that aided the blasting was the presence of the stream of water that pours out from the portal of the Niagara Falls Power Company's tunnel close beside the abutments. The force of this water served to carry away the broken up snow and ice so that quite a large space was broken out of the ice bridge on the New York side, but on the Canadian side the effect was different, the broken ice simply falling back in place, there being no current there to carry it away. When the ice was blasted it was observed that the average thickness on the level was from 20 to 30 feet above the water line, but it appeared still thicker than this below the water, which would give the ice bridge quite a thickness. It has always been the estimate at Niagara that only one-third of the ice in the bridge is above water. Of course, this idea does not hold to all parts of the structure, especially at those places where the ice is piled mountains high. In the deep crevasses and high ledges of the ice there is ample evidence that the bridge is very thick. With a lowering of the water in the river the ice bridge settles in the center, but on the shores the ice remains about where it has been tossed. With a return of high water the ice again crowded in about the abutments, and again it had to be blasted out.

It was found that the crowding of the ice up under the bridge had bent some of the laterals, but so far as the abutments were concerned they were apparently uninjured. Still it was apparent that the formation of an ice bridge will always threaten the safety of the great arch until the abutments are properly protected, which protection will probably be given by a wall or piers constructed about them.

In the case of the Grand Trunk arch, 2 miles down stream, the abutments are midway between the cliff tops and the water's edge, and are thus out of danger from the ice and water.

A fact of considerable importance that is to be taken into consideration in connection with the location of the arch abutments and the ice jams is that 15,000,000 cubic feet of water pours over the falls every minute and must find its way down the gorge or intense pressure will follow in a very brief time. With such a force shoving on a mass of ice like that which forms in the Niagara gorge there is no telling what would result. This year the steamer docks on both sides of the river have been wrecked, for all they were of the most substantial construction. In past years buildings have been wrecked and handled like toys.

Still another dangerous feature is that the ice may find a substantial anchorage against the superstructure of the steel suspension bridge that was wrecked by a gale on the night of January 9, 1889, and which dropped and still remains under the water beneath the new steel arch, it having never been removed only to the extent of those portions that fell on the slopes of the banks. At stages of low water the end may be seen on the Canadian side, thus indicating that the superstructure is not very far down in the river channel—in fact, a tightly riveted mass like the suspension bridge would not be likely to settle very far down toward the bottom before it stiffened and became fast. With the ice lodged against this old bridge a jam of immense proportions might result.

### The Illinois Steel Company.

The Chicago *Economist* makes the following statement regarding the affairs of the Illinois Steel Company:

The whole series of debentures of 1910, amounting to \$6,200,000, has been called for payment at 105 and interest on May 3, 1899. The company have outstanding also \$7,000,000 of debentures of 1913 which may be called at par and accrued interest at any time. The reason for calling the debentures of 1910, which are payable with a 5 per cent. premium, doubtless lies in the fact that they are convertible into the stock of the company at par at the option of the holders. Their terms provide that such conversion can be made at any time when the transfer books are open. None has been so converted because Illinois Steel stock has not been above par. At present, however, the stock, or its equivalent in the stock of the Federal Steel Company, is above par, so it would be to the advantage of a holder of the debenture to convert it into Illinois Steel stock, provided he could turn the latter into Federal Steel stock on the same terms given the old stockholders. Holders of Illinois Steel, by paying in \$20 per share, received par in Federal Steel preferred, and 80 in Federal Steel common, the former being worth 88 and the latter 53. The value of 100 shares of Illinois Steel stock on the basis of this conversion would be:

100 shares Illinois Steel, paying \$2,000	
Gets 100 shares Federal Steel preferred at 88	\$8,800
And 80 shares Federal Steel common at 53	4,240
Total	\$13,040
Less payments	2,000
Total	\$11,040

The Federal Steel Company might not accept stock of the Illinois Steel Company on the old terms; but it would be objectionable no doubt to have the debentures converted into stock.

**The Charter Gas Engine.**—The February issue of *Carter's Monthly*, Chicago, contains an interesting description of Sterling, Ill., under the title "A Twentieth Century Town." Among the industrial establishments shown is the plant of the Charter Gas Engine Company, accompanying which is a portrait of Geo. M. Robinson, president of the company. The article states that John Carter originated, over a dozen years ago, the first gasoline engine. The company, then the Williams & Orton Mfg. Company, manufactured gas and gasoline engines up to 1888, when the name was changed to the Charter Gas Engine Company. Engines built by the company are working in every State and Territory in the Union. Some are running in European countries, and others in Central and South America. The scope of their work is varied, covering a wide range of usefulness, running air compressors, bakers' machinery, cigar factories, dynamos, elevators, feed mills, grain elevators, hay presses, printing presses, metal stamping, threshing machines, ventilators, &c. They are also used for propelling launches. These engines are built in several styles, stationary, portable and for pumping, ranging from 1½ horse-power up. It is stated that, although the Charter engine has been on the market longer than any other gasoline engine in the world, there never has been an instance of fire or explosion due to it, which is claimed to be a record that is not duplicated. The simplicity of the engine is substantiated by the fact that it is shipped to distant points and set up solely by printed di-



rections. The durability of this engine is also demonstrated by the fact that engines are running which were started 14 years ago and have been in constant use.

### The Vrooman Furnace Arch Brick.

More or less difficulty has been experienced by manufacturers of malleable iron castings and others using furnaces requiring arched roofing in finding a fire brick to satisfactorily endure the expansion and contraction to which such roofs are subjected. Experiments have been made both as to the shape of the brick and the materials of which the bricks are composed to secure something which would stand the test for at least a reason-

construction five to ten times the binding force of the old style arch brick. With bricks of this shape it is also possible to get a flatter roof than thus far constructed, also to build a furnace of greater dimensions. Fig. 3 shows a bung for a malleable furnace filled with this brick, which, it is claimed, will stand longer than a bung made of any other brick, as the bricks will not drop out when the bung is lifted off. These bricks are made from the most highly refractory clays for furnace roofing construction.

Charles T. Schoen, president of the Pressed Steel Car Company, has made a statement to the stockholders, which includes the following: "All the plants are free from mortgage or other liens, and also free from any



Fig. 1.

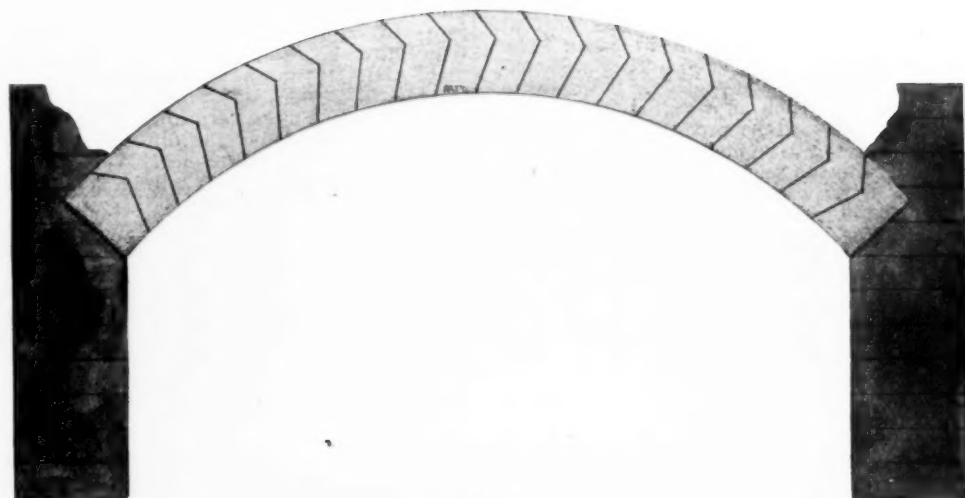


Fig. 2.



Fig. 3.

### THE VROOMAN FURNACE ARCH BRICK

able length of time. H. S. Vrooman, 220 West Twentieth street, Chicago, has, after a long series of practical tests, devised a special shape of brick, which is here illustrated. Fig. 1 shows the shape of the bricks. They are made with a shoulder, which gives independent support to each brick and thus relieves the outward pressure on the side walls and prevents them from spreading and the arch from coming down. As they contain all the points of the old style arch brick, being tapered to form a circle, they have the special advantage of this shoulder, but, in addition to the special shape, end pieces have been designed with shoulders on which the body of the arch can rest. An arch constructed with these bricks is shown in Fig. 2. The inventor states that the expansion or contraction caused by sudden changes of temperature cannot be great enough to cause these bricks to drop out of the arch, as they have by their peculiar

floating debt and with \$1,500,000 cash working capital, in addition to very large stocks of materials, both raw and in process of manufacture. The company own and operate three plants, all built within the last few years and thoroughly modern, two at Pittsburgh and one at Joliet, and have recently let contracts for buildings, machinery, &c., which will double their present capacity for building steel cars. By July 1 next the company will be in position to build 80 steel freight cars per day, or, say, 24,000 per annum, 300,000 car bolsters per annum and 180,000 car truck frames per annum. The truck frames and bolsters are applicable to wooden as well as steel cars. A very large proportion of all the wooden cars now being built are equipped with these trucks and bolsters. In addition to the foregoing, the Pressed Steel Car Company manufacture a large line of other pressed steel specialties used upon all classes of freight cars."

## Canadian News.

### A Blast Furnace for Toronto.

TORONTO.—February 4, 1899.—The project, referred to some time ago, to organize a company to erect and operate a blast furnace in Toronto is still discussed. Letters appear from time to time in the local press, now for, now against, the enterprise, its opponents maintaining that the furnace would either drive the Hamilton Company out of business or fail itself, as the demand is held to be too limited to keep both going profitably. It is stated, on the other hand, that, aside from Hamilton's contribution to Toronto's foundries, there are consumed in this city 20,000 tons of pig iron per annum; hence, without trenching on the Hamilton Company's trade at all, a market could be found in Toronto alone for one-third of the output of a smelter with a capacity of 200 tons per day.

### The Deseronto Furnace.

The new charcoal iron smelting works at Deseronto, Ont., are completed. On the 26th ult. the first run of iron was made. The works were commenced in May last. At present the output is to be limited to 35 tons per day, but this is expected to be increased. There are 12,000 tons of Lake Superior hematite ore at the furnace. It is the intention to use the ores of Hastings and Addington as soon as it is practicable to do so, as these sources of supply are very close and accessible by rail. The skilled men in charge of the furnace are from Detroit; in fact, the enterprise is largely of Detroit origin, the Gaylords of that city being chief proprietors. For years they bought charcoal from the Rathbuns of Deseronto to run the Detroit charcoal iron furnace. The Gaylords moved to Deseronto, where a blast furnace has been erected at a heavy cost, the Rathbuns taking an interest of a quarter in it. The Rathbuns are under contract to deliver 40,000 bushels of charcoal at the furnace every month at 4 cents per bushel. To do this it was necessary to build new charcoal works, which the Rathbuns at once set about doing. The new charcoal works are about completed. They will consume from 40 to 60 cords of wood per day. By-products of the same raw material, such as wood naphtha, acetic acid and other chemicals, will be produced. A demand for charcoal iron is expected to be maintained by the railway works, especially for the manufacture of car wheels. On the 17,000 miles of railway operated in Canada there are computed to be 50,000 freight and baggage cars, whose complement of eight wheels average 500 pounds. To provide for the necessary renewals it is believed that there will be a growing market in Canada for charcoal iron.

### New Locomotive Works.

Ottawa has the promise of a new locomotive manufactory. A syndicate composed of prominent capitalists in Ottawa and Toronto with a capital of \$800,000 for the undertaking proposes to commence making locomotives there as soon as it is possible to get plant installed. The old Perkins foundry and machine shop on Queen street have been leased, and in it within a few months all the necessary machinery will be placed. Further, the building is to be enlarged, and beside it another building for the manufacture of acetylene gas engines will be built, and its works operated by the same company. Power is to be obtained from the Chaudière Falls. Machinery for the new works is now being manufactured at the Victoria foundry. Ottawa is rapidly becoming an important railway center. Besides the Canadian Pacific Railroad, it is entered by the Canada Atlantic, and within the last two years the Ottawa, Arnprior & Parry Sound road, a line of 500 miles in length, has been built from it. Then there is the Pontiac line and the new Ottawa & New York line. It is also the hub of a considerable electric railway system. It ought, therefore, to be a good point for locomotive works.

### Trade Items.

Arrangements for the erection of the Abbott-Mitchell Iron Works, at Belleville, are now said to be about completed. The city has ordered that its contribution of \$2000 for the site be paid over to the parties.

The Midland Railway Company of Nova Scotia have purchased from Charles Cossils, the Canadian agent of the Carnegie Company, the rails for the road now being constructed between Windsor and Truro. The quantity needed for laying the 60 miles is about 5800 tons. The rails are to be delivered in spring.

A second diamond drill is to be put to work at Whycomagh, Cape Breton, to bore for tungsten.

The New Glasgow *Bulletin* says that orders have been placed by the Government with the Nova Scotia Steel Company for 5000 tons of steel rails for the Intercolonial line, the rails to weigh 80 pounds to the yard. It has not hitherto been thought possible that steel rails could be made in Canada against free outside competition.

W. H. Sills, an extensive mica dealer in Chicago, has made arrangements for marketing Canadian mica in London and Berlin.

## The Keegan Charges Against the Navy Ordnance Bureau.

WASHINGTON, February 7, 1899.—The Senate Committee on Education and Labor has resumed its hearings on the eight-hour bill, which was reported to the Senate without recommendation at the last session, but which has since been recommitted at the request of Chairman Kyle because a canvass of the Senate convinced him that the measure could not pass in the form as reported.

At the session of the committee held on the 3d inst. certain sensational charges involving the Cramp Ship Building Company, the Maxim-Nordenfeldt Company and the officials of the Ordnance Bureau of the Navy Department were made by J. J. Keegan, representing the International Mechanics' Union. Mr. Keegan sought to show that, in spite of the shorter hours enforced in Government navy yards and the higher wages he alleged were paid, the Government was able to turn out work at a large profit upon the figures representing the bids of private concerns for the same products, and he charged that both the Cramp Company and the Maxim-Nordenfeldt Company, finding themselves unable to carry out certain contracts, had turned them over to the Washington Navy Yard, where they were completed at so low a cost that a handsome surplus was left from the allotment to cover the work, which the ordnance officers paid over to the original contractors as a bonus. Following is a verbatim report of the most essential part of Mr. Keegan's statement:

"I would say that there has been great danger expressed here in my presence and out of my presence that the passage of this bill would entail bringing the Government into competition with outside firms. I have some information on that point. I passed some of it to Senator Lindsay and mentioned it to Mr. McCammon, representing the Cramps. He was asked if it were not true that the Cramps took a contract from the Government and after taking it found they could not complete it at the price at which they had accepted it and returned it to the navy yard to be done there, and if it cost more they would pay the difference and if it cost less they expected the difference. Well, Judge McCammon did not deny that such might have been the case, possibly. He said he was closely allied to the business of that company for many years and knew of no such instance. And, therefore, to make myself more positive, I went yesterday to the navy yard to make inquiry for my own satisfaction. I learned yesterday from a person who assisted in preparing the estimate that Cramp did get such a contract, and not only did he get it, but he got it at a higher estimate, through some unknown influence, and after taking it and finding they could not complete it at that figure they returned it here to the Washington Navy Yard, and it was done under the eight-hour system, where the workmen working on it were getting from 25 to 45 per cent. more than Cramp ever paid, and they did the work and returned to Cramps the enormous sum of \$17,000. Whether they were entitled to it, it will take a better mathematician than I am to tell. That is a known fact.

"I learned of another incident that is going on here in your navy yard at the present time. They are building what is known as the Maxim-Nordenfeldt gun. The Government entered into a contract for these guns at a figure of \$2400 apiece. When the gun was held up to the open market at that figure Brown & Sharpe and the various starvation wage companies of this country refused to enter into competition—accept the contract at such a figure as \$2400. The gun was then returned to the Washington Navy Yard to be completed under the same conditions as a former gun carriage contract—that is, if it could be gotten out for \$2400 the Government would pay the \$2400 for it, and if it could be gotten out for less these people should receive the difference. They are building that gun there—yesterday and to-day. They are turning those guns out at \$1000 apiece and the Maxim-Nordenfeldt Company are receiving the extra \$1400, yet these gentlemen come here and say that navy yards are a failure and that the Government cannot enter into competition with private persons."

Since the above statement was made Chairman Kyle has caused the stenographer's report of the hearing to be transmitted to Captain O'Neil, Chief of the Bureau of Naval Ordnance, with a request for a statement of the facts in the cases referred to. This statement has been prepared, and while its text cannot be published in advance of its formal receipt by the committee, the correspondent of *The Iron Age* has been provided with the following abstract, which shows conclusively that the charges made by Keegan are baseless.

The facts in the first instance are that in the latter part of 1894 the Cramp Company were awarded a contract for the construction of certain gun carriages, upon the com-



pletion of which they were to receive \$16,832. The work had been commenced, when it was found that the Washington Navy Yard was better equipped for turning it out than were the Cramp Company, and accordingly, in April, 1895, it was agreed that the contract should be canceled and the work done at the navy yard, and upon this contract the Cramp Company were never paid one cent, not even for the actual work that had been done.

In regard to the Maxim-Nordenfeldt contract, this company are the owners of patents covering the construction of a gun of which the Ordnance Bureau ordered a number, the contract price being \$2375 each. When the guns were required it was found that there was no establishment in this country capable of turning them out within the limited time allowed, and the contracting company entered into an agreement with the Ordnance Bureau for the making of these guns at the Washington Navy Yard, it being the Maxim-Nordenfeldt Company's desire that this should be done, even though they actually lost on the contract, and it was believed that it would be the means of having the guns generally introduced into the service of the United States Government.

Such a contract was entered into under which the contracting company furnished all the materials required in the manufacture, tools, cutters, &c., and the navy yard was to charge the company for all the labor expended on the guns and 100 per cent., or double the actual amount, in addition, and the difference between this and the contract price was to be paid the contractors. As near as can be estimated the amount to be charged the contractor on the 200 per cent. basis will leave about \$250 to be paid the Maxim-Nordenfeldt Company on account of each gun. This sum, to be paid the contractor on account of the construction of the guns, will not, it is believed, anything like pay for the material which they were required to furnish the Ordnance Bureau, and had the Government undertaken to build the guns on a roy-

rectors are Walter Johnson, C. Lowthian Bell, Alexander S. Hay of Naylor, Benzon & Co., Maurice L. Bell and Charles Dorman.

### The "Shelby Three" Trolley Pole.

The Shelby Steel Tube Company of Cleveland, Ohio, are manufacturing a trolley pole of three pieces of high carbon open hearth cold drawn seamless steel tube. The parts are then welded into one piece. The construction of the pole will be readily understood from the engravings.

### The Minnesota Pig Iron Bounty.

The Joint Committees on Manufactures of the Minnesota Legislature, now in session, have recommended for passage an act under which a bounty of 50 cents a net ton will be paid on all pig iron made under the provision of the act for the next 10 years. There is little doubt of the passage of the bill.

For years Minnesota has viewed with regret the shipments of iron ore from the State for reduction elsewhere. Two years ago an act was passed under which any ore mined on State land might be freed from the State royalty of 25 cents a ton if it were manufactured in the State, but as there was only one active mine on State land and that one under lease to the Carnegie interests, the bill has been of no avail. It is hoped by those interested in the growth of the State that the present measure will result more favorably.

It can be proved without difficulty, and has been so proved time and again, that the cost of assembling material for making pig iron is less at the western end of Lake Superior than at any of the chief seats of that industry in the North. It is unnecessary to go into the figures for this statement in the brief space permitted

### THE "SHELBY THREE" TROLLEY POLE.

alty charge, the royalty alone would not have amounted to less than \$500 on each gun. The agreement under which the navy yard undertook the construction of the guns was submitted to the American Ordnance Company, who declined to make the contract upon the same terms.

W. L. C.

### Bell Brothers a Stock Company.

In view of the fact that Sir J. Lowthian Bell and his sons are well known in this country, interest attaches to the issuance of a prospectus which explains the conversion of the old firm of Bell Brothers into a public company, with which is to be coupled the building of a basic open hearth steel plant. It is reported that the issue has been oversubscribed and that a premium is being bid. The capital of the company is £1,000,000, divided into 100,000 ordinary shares of £5 each and 50,000 cumulative 6 per cent. preference shares of £10 each. Besides this, there is £500,000 of 4 per cent. debenture stock. Dorman, Long & Co., Middlesbrough, and Sir Lowthian Bell and his family have subscribed for £300,000 of the ordinary share capital in cash, in equal moieties, the balance being reserved for future issue. The public are asked to subscribe for £332,400 of the preference shares and £366,600 of the debenture stock, the other being taken by the venders in part payment for the works. It is certified that the average annual profits of the company during the last ten years have been £78,180; but taking the last three years, they have been at the rate of £99,420 per annum. The company own 12 blast furnaces, making 320,000 tons of pig iron per annum; they raise 715,000 tons of coal, 1,165,000 tons of ironstone and 206,000 tons of limestone, and they make 305,000 tons of coke. The purchase price of the works is £900,000. It is intended to erect near the blast furnaces at Clarence steel works equipped with the latest machinery for the manufacture of finished steel for ship-building and other purposes, at an estimated cost of £300,000, toward which cost Dorman, Long & Co., Middlesbrough, will subscribe half the amount in ordinary shares of Bell Brothers. Sir Lowthian Bell, Bart., is chairman of the company; Arthur J. Dorman, vice-chairman, and Hugh Bell, managing director. The other di-

rectors are Walter Johnson, C. Lowthian Bell, Alexander S. Hay of Naylor, Benzon & Co., Maurice L. Bell and Charles Dorman.

rectors are Walter Johnson, C. Lowthian Bell, Alexander S. Hay of Naylor, Benzon & Co., Maurice L. Bell and Charles Dorman.

here. The question of manufacturing in the Northwest has been one of market, labor, undesirability of changes, inertia of capital, vast Eastern interests unfavorable to new plants, combinations and other items that are considered by the advocates of the present measure in Minnesota as, to some extent at least, merely temporary.

It is argued that the question of markets should not be unfavorable to a Northwestern location. Minnesota terminals have as favorable rates to the lower Mississippi River, the Southwest as far as Southern California, the far Northwest, as has Chicago or other large manufacturing points. They can reach the vast territory embraced in Minnesota, the Dakotas, Nebraska, Western Iowa, Kansas and much more, at less rates than any other points. In this territory alone the present consumption of all sorts of finished steel is very large, and is steadily growing. During the eight months of lake navigation last year there were received at Duluth, for use and distribution from there, some 240,000 tons of manufactured steel. This in addition to whatever was shipped into the same territory by rail and during the entire year, a quantity that railroad books show to have been very large. There are something like 1,000,000 kegs of nails sold in the territory covered by Minnesota hardware jobbers, and from 25,000 to 50,000 tons of wire fencing. The consumption of implement steel, hardware, &c., is very large, and as this is the great producing section of the West, whose agriculturists are growing rich, must steadily increase. If the question of rails be taken into account, it is understood that before a rail mill could be put up and put into operation at least one of the great transcontinental lines reaching from Minnesota to the Pacific would be in the market for a very large and annual quantity of rails for relaying, and that this work alone, for this and other roads, would give a very considerable business in the immediate Northwest for a series of years. Cost being alike, the freight saved over Eastern made rails for this trade would be an important item of profit. It is also felt that when the export traffic to the Orient is considered, and at least until such time as an isthmian canal is completed, Minnesota terminals would have a distinct advantage over any other location, enough, at least, to offset any disadvantages they may find in the inception of the industry, especially when coupled with a bounty that amounts to

about \$1 a ton on finished steel. The Northwestern people therefore feel that their market is something not to be derided or lightly regarded.

A bounty from the State on a furnace producing, say, 200 tons of metal a day, would be 5 per cent. interest on over \$700,000, and quite a considerable concern could be erected for that sum. The Northwestern argument includes the coking of the necessary fuel on the spot, brought from the East by a water freight that in the past few years has been to the ore freight the other way, and between the same terminals, as 25 is to 60. Nobody in the lake shipping trade looks for any renewed period of higher freights, nor for any more unfavorable proportion than this between East bound and west bound ore and coal. The promoters of the bill have been assured by leading Northwestern railway managers of their best endeavors in aid of the industry, and of the establishment of a "smelting-in-transit" rate that shall bear the same relation to the iron trade that "milling-in-transit" does to the flour traffic of the State or the more recent "feeding-in-transit" to its cattle industry, which has been built up to great proportions in the past three or four years.

Minnesota labor gets from the mining of ore from 50 cents to \$1 a ton, and it wants to add to this the many more dollars spent in the Eastern centers for the reduction of this ore to pig, billets, plates, beams and more highly finished forms. The entire State has been led to believe that by the encouragement of this industry the home market for every producer in the State will be very greatly enlarged. Under this belief the country districts of the State are apparently willing to bear the comparatively small added tax that may be levied for the purpose.

### The Nickel Steel Armor Patents.

WASHINGTON, February 7, 1899.—The secretary of the Navy has made public the decision of the President in a notable case recently appealed to the Chief Executive, which will doubtless serve as an important precedent for the guidance of the Government in similar issues that may be raised hereafter.

The President has decided that the Secretary of the Treasury cannot pay to the firm of Schneider & Co. of Creusot, France, the sum of \$50,000 in settlement of the claim of that company for the alleged infringement of their patents for producing nickel steel armor, unless the parties who manufactured the armor for the Government—namely, the Carnegie Steel Company—agree to the compromise. The facts in the case, together with the basis of the President's decision, are set forth in the following opinion of the Attorney-General, addressed to the President, which has been formally approved and transmitted to the Secretary of the Navy:

"In compliance with your directions, I have heard the appeal made to you on behalf of the Carnegie Steel Company, Limited, from the decision of the Secretary of the Navy, authorizing the compromise of a certain suit for infringement of a patent, which suit is now pending between Schneider & Co. of France and the Carnegie Steel Company, Limited. By a contract, dated November 20, 1890, between Carnegie, Phipps & Co., Limited, and the United States, the party first named agreed to manufacture and deliver to the Navy Department 6000 tons of steel armor plate, at certain prices in the contract specified. The contract gave the Secretary of the Navy option to require that these armor plates should be made either of ordinary steel or of nickel steel, with certain varying provisions with reference to compensation as between ordinary steel and nickel steel. At the time the contract was made, certain patentees, it being conceded that Schneider & Co. of France were the patentees referred to, claimed, by reason of their inventions, to control the right to make armor plate containing nickel; and to meet the conditions which might arise by reason of such claims being made and subsequently established, whereby the cost of the nickel plate would be increased to the extent of the royalties or damages that might be recovered in a suit, the following provisions were inserted in the contract:

#### The Contract.

"Whereas, certain patentees claim, by reason of their inventions, to control the right to make armor plate containing nickel; and,

"Whereas, the party of the second part declines to recognize the claims of said patentees and to pay the royalty demanded by them, said royalty being two (2) cents per pound upon finished armor plates and appurtenances;

"Therefore, for the protection of the party of the first part there shall be added to the cost of the said nickel steel armor plates and appurtenances, when computed as aforesaid, the sum of two (2) cents per pound

to cover said claims, which sum the party of the second part agrees to pay from time to time, as the payments for said nickel steel armor plates and appurtenances are made according to this contract. Said sums as paid are to be deposited by the party of the first part in such depositories of the United States as the Secretary of the Navy may designate.

"Should it finally be decided by the courts of competent jurisdiction that the said patents are invalid, or that there is no valid claim against either of the parties hereto, their agents or employees, said fund shall be promptly paid over by the party of the first part to the Secretary of the Treasury, after deducting therefrom such reasonable counsel fees and expenses, if any, as may be approved by the Secretary of the Navy, insured by the party of the first part in defense of such litigation; or, in case of amicable settlement between the parties hereto and said patentees, the balance remaining after such settlement and payment of expenses, as aforesaid, which may have been necessarily incurred by the party of the first part, shall be paid over to said Secretary of the Treasury.

"In case of a final judgment in favor of said patentees, the said fund shall be used, so far as necessary, for the payment of said judgment, and costs and expenses approved as aforesaid, including reasonable attorneys' fees, but in case all of said fund shall be required for the payment of said judgment, then the party of the second part shall pay such expenses as shall have been properly incurred by the party of the first part, after approval as aforesaid, including reasonable attorneys' fees in the defense of any such suits."

"The Secretary of the Navy, in accordance with the privilege reserved in the contract to the Government, elected to require the contractors to make and deliver nickel steel armor plates instead of steel armor plates, and the contractors duly complied with such requirement.

"Thereupon, Schneider & Co., the patentees, began a suit for infringement of their patent rights against the contractors, in the United States Circuit Court for the Western District of Pennsylvania, which suit is still pending and undetermined.

"The Government being under obligation, by the terms of the contract above recited, to bear the expenses of defending this suit, the Secretary of the Navy employed special counsel to represent the Government in such defense, the contractors also furnishing counsel of their own selection to defend the suit on their behalf.

"No deposit or payment of the additional price of 2 cents per pound to the Carnegie Company, as a guarantee fund, has ever been made, as provided for by the contract, for the reason that the Secretary of the Navy, subsequently to the execution of the contract, was advised that such payment could not lawfully be made, as there is no provision of law which permits a deposit of the funds of the United States, under such circumstances, elsewhere than in the United States Treasury. Consequently, said 2 cents per pound was not paid over to be held on deposit as provided in the contract, but the Navy Department has always held itself liable to devote the sum to which the said payment would amount, being upward of \$270,000, to the discharge of its guarantee under the contract.

#### A Proposed Settlement.

"After an examination of the validity and scope of the Schneider patent, and the possible liability of the Government under its guarantee, the Secretary of the Navy, acting under the advice of his special counsel, determined that the claim was a proper one for settlement, and a provisional agreement was arrived at between the Secretary of the Navy and Schneider & Co., by which the Government, in satisfaction of all claims which the Government might be liable for to Schneider & Co. under the contract, should compromise by the payment of the sum of \$50,000. This settlement, it was proposed, should be carried out by release from Schneider & Co. both to the United States, its officers, agents or employees, and to the Carnegie Company, from all and every claim or demand by reason of the manufacture, delivery or use of nickel steel armor made and delivered under the contract of November 20, 1890. The proposed release contains the following clause:

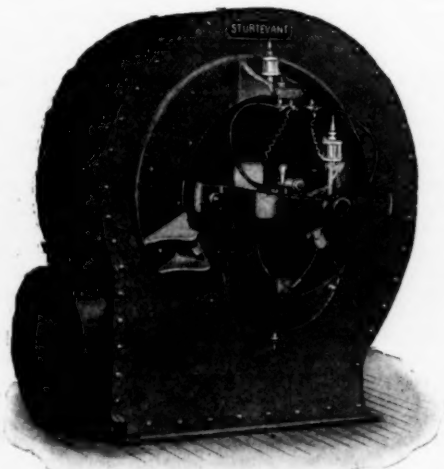
"This release and settlement shall not be construed or operate as an admission or an estoppel by or against said Schneider & Co., or the parties to said contract of November 20, 1890."

#### An Appeal to the President.

"The Carnegie Company, feeling aggrieved at the decision of the Secretary of the Navy in respect to this proposed settlement with Schneider & Co., have appealed to the President of the United States, in accordance with the right given them by the fourteenth clause of their contract, and the matter now comes before the President



for his decision, which by the contract is made conclusive. So that the question is whether the proposed settlement recommended and agreed to by the Secretary of the Navy ought, in justice and upon a consideration of the rights of the Carnegie Company, to be ratified or disapproved. It is plain, and seems to be conceded, that it was in the contemplation of the Navy Department, as well as of the contractors, that in order to furnish the armor plate required by the contract it would be necessary for the contractors to equip a suitable plant adapted to that business, and that the cost of establishing such a plant would equal, if not exceed, the total contract price of the armor plate required to be delivered under this contract. It is further suggested, on behalf of the Carnegie Company, that this contract was the first of a series of similar contracts, which it was in the reasonable contemplation of the parties should be entered into for furnishing armor plate, and that the Carnegie Company were induced to undertake this contract and build the requisite plant upon the reasonable belief that they would subsequently be employed by the Government to furnish other quantities of armor plate for naval purposes. As a matter of fact, other contracts were subsequently entered into between the Carnegie Company and the Government for armor plate of nickel steel, which the Carnegie Company have either completed or are in the process of completing. Such subsequent contracts, however, omit any reference to the claim of the patentees of the nickel steel process or processes, and award a definite and fixed price to the contractors, irrespective of any patent rights. Counsel for



A SMALL CASED ELECTRIC FAN.

the Navy Department contends that the proposed compromise and settlement with Schneider & Co. by the Government is a matter as to which the Carnegie Company are not legally concerned; that they cannot be injured thereby; that whether or not the Government will voluntarily pay \$50,000 to buy its peace with the patentees rather than continue the litigation to a final determination is merely a matter for the prudential consideration of the officers of the Government; and that, the Secretary of the Navy being convinced that the interests of the Government will be financially benefited by such payment, the compromise can lawfully be made, and that the Carnegie Company are not injured thereby and have no right to object.

"It is contended, on the other hand, by the Carnegie Company, in the first place, that the language of the contract expressly forbids a settlement by the Government with the patentees without the concurrence of the contractors; and, secondly, that even if the Navy Department has the lawful power and authority to make such settlement, nevertheless it would be unjust for it to do so, because such settlement would be injurious to the interests of the Carnegie Company, and in violation of the spirit of the understanding which existed between the contractors and the Government at the time the contract was entered into.

"It will be observed that by the recital of the contract it was expressly declared that the Government declines to recognize the claims of said patentees.

"It further provided for the final determination of the claim of the patentees in a court of competent jurisdiction through litigation to be inaugurated by the patentees and defended at the expense of the Government. The contract declares, 'Should it finally be decided by the courts of competent jurisdiction that the said patents are invalid, or that there is no valid claim against either of the parties hereto, their agents or employees, said sum shall be promptly paid over,' &c.

"This language, taken together, seems to fairly justify the contractors in believing that the Government had definitely and finally declined to recognize the claims of the patentees, or to pay the royalty demanded by them, and that the Government was willing to assert and maintain its hostility to the claim of the patentees to the very end of any litigation which might be begun by the patentees.

"In my judgment, this was a condition which the contractors have a right to insist upon, in view of the conditions which existed when the contract was entered into, with reference to the manufacture of armor plate and the establishment of their plant, and the prospect of future contracts of the same kind.

"It would manifestly be to the injury of the manufacturers for the Government, before the end of the litigation, to revise its previously declared policy and recognize in part the justice of the patentees' claim by the payment of a substantial sum in compromise. The agreement to compromise by the payment of \$50,000 cannot be considered otherwise than as a recognition to that extent of the justice of the patentees' claim. The payment of so large a sum can scarcely be put upon the basis of payment in order to buy peace, and seems to be contrary to the declared policy of the Government to decline to recognize the claims of the patentees and contest them to final decision.

"I also think that the language of the contract relating to an amicable settlement is consistent with this view, and inconsistent with the view adopted by the Navy Department. The language is, 'In case of amicable settlement between the parties hereto and said patentees, the balance remaining after such settlement, &c., shall be paid over to said Secretary of the Treasury.'

"In the light of what I have said before, and in the light of the circumstances that existed at the time the contract was entered into, it appears to me that the contract in the part last above quoted refers to an amicable settlement in which both the parties to the contract should participate with the patentees. That is the exact language of the contract. It does not say, 'in case of an amicable settlement between either of the parties hereto and said patentees,' but 'in case of an amicable settlement between the parties hereto and said patentees.'

"I therefore have the honor to advise you that the proposed compromise and settlement between the Government, represented by the Secretary of the Navy, and Schneider & Co., would be in derogation of the rights of the contractors, and that such settlement ought not to be made against their objection.

"The appeal of the contractors involves also a complaint against the action of the Secretary of the Navy in not paying over to the contractors the sum of 2 cents per pound to cover the claims of said patentees, as provided in the contract.

"In my judgment their appeal in that respect should not be sustained. I think the action of the Secretary of the Navy, in view of the law upon the subject, was correct, and that he is not justified by any statute in making to the contractors a payment of the guarantee fund, to be deposited as in the contract provided." W. L. C.

#### A Small Cased Electric Fan.

While the small disk fan has served its purpose of agitating the air, there has been for general purposes no type of small electric steel plate cased fan so constructed that air, smoke, gases or other material can be exhausted from a given space. In the accompanying illustration is shown a recent design of the B. F. Sturtevant Company of Boston, Mass., intended to meet the above requirements. The fan itself is of their usual steel plate construction. To its side is riveted a cast iron plate with three projecting lugs. These lugs serve to center and hold the bi-polar motor, the field ring of which is constructed of wrought iron. The field pieces are likewise of wrought iron, and the field coils of special shape, making possible the economical distribution of wire. The armature is of the drum wound type, while the commutator is of pure rolled or drawn copper. Carbon brushes are used, the brush holders being of the reacting and self adjusting type. Yokes which extend from either side of the magnet ring, and which are provided with ring oiler boxes, serve as bearings for the support of the armature shaft. Thorough arrangements are made for oiling, and the overflow oil is led to a tank supported beneath the armature ring, from which it may be drawn when full. A fan of this type may evidently be constructed to discharge in any given direction, and being of steel plate can be readily made to conform to any special conditions.

The E. & G. Brooke Iron Company of Birdsboro, Pa., are preparing to resume operations at their ore mines at Falls of French Creek, Pa.

## Special Nickel, Chromium and Silicon Steels.\*—II.

BY A. ABRAHAM.

### Nickel Chrome Steel.

The nickel chromium steel has been submitted by the Imphy works to a series of other tests, some of them important. During the mechanical tests of the steel in its natural state it was generally noticed that the fracture had the appearance of a crumpled sheet of tin foil, at the same time showing an irregular crystallization. The "stricture" also in nearly every case was very small. With an ultimate resistance of about 70 kg. (99,540 lbs.) the elongation is about 45 per cent. Hardening in most cases increases the elongation to 60 per cent., and augments the stricture as well. On the other hand, drop tests prove that the tendency to deform is noticeably increased by hardening. Annealing at a nascent red heat followed by slow cooling proved a decided disadvantage, inasmuch as it diminished both the ultimate resistance and the stricture, without increasing the elongation to any great extent. Besides, the tendency to deform is also increased.

The fact that the elongation of the metal in its natural state is very large and the stricture very small leads to the conclusion that, contrary to what happens in ordinary steel, in the case of nickel steel the strain is taken up by the whole length of the test piece, cylindrical part and heads as well. This fact explains to a certain extent the peculiar behavior that the metal presented when, in the shape of  $\frac{5}{8}$  to  $\frac{3}{4}$  inch plates, it was tested under the drop. These last named tests were undertaken in order to determine whether it would be advisable to use plates of this metal for the bridges of war vessels, where hitherto only dead soft steel found application. In order to reproduce as much as possible the conditions under which bridge plates may be struck in a vessel, a drop hammer weighing 326 kg. (719 lbs.), carrying at its lower end a point similar to the point of a navy shell, was built and allowed to freely drop from a height of 5.50 m. (between 18 and 19 feet). The plates to be tested were small test pieces fastened horizontally by means of clamps to a backing of wood in an iron frame and placed directly under the drop. Nickel steel and soft steel plates of a thickness of 20 mm. were first tested. In the middle of each plate a square was traced. The first blow was struck in the center of the plate and the others in the four corners. The general deformation of the plate was very nearly the same in all cases, but the local deformations were less in the case of nickel steel. On every plate the last blows produced a greater bulging on the rear face than the first.

Designation of plates.	Bulging in the rear of each impact.		Average penetration of the point of the drop.
	First blow. Millimeters.	Following blows. Millimeters.	
Nickel steel plate hardened and annealed .....	5	8.1	13
Nickel steel annealed in flaming wood .....	6	8.1	12.6
Dead soft steel (1 per cent. nickel), hardened and annealed ..	7	10.4	17.3
Ordinary dead soft steel, hardened and annealed .....	7.5	11.7	18.2

Encouraged by the satisfactory results, the same tests were repeated on 15 mm. plates. Here the dead soft 1 per cent. nickel plate withstood well the test, with a penetration of 13.5 mm. on the first and 17.5 mm. on the last shots, with an average bulge on the rear face of 21 mm. The fourth shot alone produced a slight crack in the rear. On the contrary, the nickel steel plate, hardened and annealed, tore under the action of the drop. The very first blow acted very nearly like a punch and came near making a clean hole in the plate by pushing back the metal under the point of the impact and nearly severing it from the plate. After this a rolled nickel steel plate neither hardened nor annealed and another plate of the same metal, hardened, were tested. The results were practically the same. The fact that these nickel plates resist so little under the circumstances is explained by the author in the following manner: A thin plate under the impact of a straight shot is very nearly and at the same time very suddenly strained to its breaking load. The region which must first resist this sudden shock is the one right under the point of impact. Dead soft steel with a great elongation can be deformed to a greater extent in this restricted region before breaking than nickel steel, whose elongation is small. It has been said previously that the elongation of stricture in this steel is only a very small part of its total elongation at the moment of the rupture.

The metal also was tested hot in the shape of 5 mm. plates. Some of them were stamped into spherical caps in the same way as is done with dead soft steel for testing purposes. The results were good. The only difference was that the plates had to be heated oftener during the

stamping operation. The same test was made with cold plates with equal success. In this respect practically no difference was noticed with steel where the carbon content was 0.81 per cent. instead of 0.63 per cent.

To test the strength of riveted work a tank of 280 mm. inside diameter was made with 5 mm. nickel chromium steel. The rivets of the same metal were 10 mm. rivets. To test its water tightness the tank was filled with water under a pressure of 16 kg. per square centimeter. No leakage was observed. Although the pressure was pushed to 100 kg. per square centimeter, equaling 1422 pounds per square inch, the ultimate resistance of the tank could not be tested on account of the leakage that took place in the seams at this high pressure. Under these conditions the author found by calculation that the rivets withstood a shear of 39.7 kg. A similar tank of 270 mm. inside diameter was now made with thin 2.5 mm. plates, only one-half as thick as in the previous case. A double row of 5 mm. rivets was used on the same instead of one row of 10 mm. rivets. The tank was submitted to an inside pressure of 120 kg. per square centimeter without rupture. In this case the rivets withstood without breaking 86.4 kg. After all these and similar other severe tests the steel was pronounced as well adapted to the manufacture of boilers.

### Corrosion Tests.

Corrosion tests are of great importance, the manufacture of the steel being undertaken in view of its applicability to the making of armor plates. Five mm. plates 1 inch square were prepared of nickel chromium steel and of soft steel, and after having been polished they were immersed:

1. In water saturated with sea salt constantly kept in ebullition on a sand bath (the water naturally being replaced while evaporating).
2. In cold water saturated with sea salt.
3. In slightly acidulated water.
4. In steam of about 60 pounds pressure. Without reproducing any of the tables we may state that in the first case, after an immersion of 70 days, the soft steel plate had lost 0.183 gram of its total weight of 23,409 grams. The nickel plate, which had an original weight of 22,944 grams, had lost only 0.005 gram, or about 36 times less than the soft steel plate. The edges of the soft steel plate were much eaten away, the faces covered with oxides and the parts not oxidized were stained black. The nickel plate had its edges only slightly attacked; black stains were seen on the faces; all the rest remained smooth.

After 150 days' immersion the nickel steel plate had lost 0.025 gram and the soft steel plate 0.366 gram. The other characteristics were as previously noticed.

In the three other cases the advantages were in nearly as marked a degree on the side of the nickel plate.

Another set of plates of the same size, not polished but simply cut from the plates as they left the rolls, were treated in slightly acidulated water for a space of three months. The nickel plate weighed 25,097 grams and lost after three months' immersion 0.431 gram. The soft steel plate weighed 23,771 grams and lost after three months' immersion 0.374 gram. Here the nickel plate had its faces stung with oxide stains, while the faces of the soft steel plates were covered with a thin layer of oxide, which, once removed, left the faces smooth. In this last test the superiority of the high percentage nickel plate over the soft steel plate was considerably less marked than in the previous tests, yet they were still sufficiently superior to warrant their use, in torpedo boats for instance.

### Steel With 12 Per Cent. of Nickel and 1 Per Cent. of Chromium.

A steel of the above composition was also tested in different ways, although not as thoroughly as the preceding one, by the Imphy Steel Works and by the French navy officials as well. We do not intend reproducing in this article the tests made on that metal and fully described by the author, but on account of the importance of the application to which this metal can be put we will indicate the main line of the tests made and the conclusions arrived at. The average composition of the metal tested by the Imphy Steel Works was: C., 0.31 per cent.; silicon, 0.163; manganese, 0.234; nickel, 12.090; and chromium, 0.807 per cent.

The steel in its natural state had a resistance of 180 kg. per square millimeter (256,000 lbs.), an elongation of 8.4 per cent. and a stricture of 9. When annealed at the temperature of smoking wood the ultimate resistance had fallen to 129 kg. (183,482 lbs.), the elongation was 9.5 per cent. and the stricture was 56. It was further noticed that the metal, which it was nearly impossible to work and machine in its natural state, could easily be worked when annealed at the temperature of the smoking wood, provided that the tools were made to work slowly.

The French navy also undertook a series of experiments on the same steel, which are described more fully by the author. The steel by them tested contained 0.46 per cent. carbon, 0.23 per cent. silicon, 0.43 per cent. manganese, 12.01 per cent. nickel and 0.75 per cent. chromium. This metal was sent by the Imphy Steel

\* Abstract from the *Annales des Mines*, by J. B. Nau.



Works in the shape of an ingot 10 inches square at the base, 8½ inches at the head and 26 inches high. It was first forged in different heats at a cherry red temperature into a 4-inch square bar. Cracks that were occasionally found during the work were carefully removed with a chisel. From the 4-inch square bar a piece was cut and rolled into a ½-inch round bar. This rolling was easy at a low temperature (cherry red). Part of the remainder was forged into a bar of 1½ inches square. The last part of the ingot was forged in three heats into a slab 10½ x 2 x 24 inches. From this slab was rolled a 3-16 inch plate without any difficulty. With these different pieces the tests were undertaken.

It was first noticed that the metal could scarcely be touched in its natural state or after having been hardened at a cherry red heat or after having been annealed at a temperature above nascent red. Besides, under all these conditions the metal is so hard and brittle that it cannot be utilized. It is only after it has been annealed at a temperature of between the smoking wood and the flaming wood that it acquires the special mechanical properties that characterize it. This annealing has also the effect to render its machining relatively easy.

The results of the tests are briefly quoted below:

The ½-inch round bar was cut into a certain number of pieces, which were treated in different ways.

In its natural state the ultimate resistance was 118 kg. per square millimeter (167,836 lbs.), the elongation 0.8 per cent., the stricture 3, fracture fine grain.

When hardened and cherry red, ultimate resistance 120 kg., elongation 0.5 per cent., stricture 2, fracture fine grain.  
Hardened and also annealed, cherry red, ultimate resistance 127 kg., elongation 0.4 per cent., stricture 3, fracture fine grain.  
Hardened at cherry red and annealed at flaming wood, ultimate resistance 136 kg., elongation 9.1 per cent., stricture 19, fracture dull.  
Annealed at flaming wood, ultimate resistance 141 kg., elongation 11.8 per cent., stricture 31, fracture dull.

This table shows that the metal in its natural state has no stricture and no elongation, that hardening and annealing at a high temperature influence it little, but it also sets forth the excellent influence of annealing at the temperature of the flaming wood. To show how much the qualities of the metal are influenced by even a slight variation in the annealing temperature, one bar was tested after it had been annealed at a temperature of the wood just starting to flame. The stricture was 7.5 and the elongation 4.5 per cent. The second sample had been annealed at the temperature of the full flaming wood. In this case the stricture was 37 and the elongation 7.7.

The drop tests proved the metal (when annealed at the flaming wood) to be very resistant, very stiff and yet not brittle. Stamping tests undertaken on the 5-mm. plates proved conclusively that the metal withstands any tests to which soft steel is submitted. Corrosion tests of the kinds previously described, undertaken with polished samples, showed the metal to be very much superior to ordinary soft steel, but in not as marked a degree as the 25 per cent. nickel steel. Similar tests made on simply rolled plates, not polished, immersed in slightly acidulated water, show the steel to be scarcely superior to ordinary soft steel.

This metal also was used by the Impy Steel Works in the manufacture of their armor plates of 5-mm. thickness, 250 such sheets being sent by them to the manufactory of fire arms at Saint-Etienne. This lot withstood the test prescribed by the Government, which is as follows:

1. From each lot of thin plates from the same heat four test pieces shall be taken, two lengthwise and two transverse ones, 100 mm. between marks and 30 mm. wide. The average minimum elongation must be at least 7 per cent.  
2. One plate from each heat, chosen at random, must resist five bullets fired from a distance of 150 m. with the 1886 rifle and the ordnance cartridge. The firing is done normally to the plate. The points of impact must be at a distance of at least 10 cm. from each other. The plate must not crack nor must any bullet go through it.

The Impy Steel Works claim that in order to obtain the above results an annealing at 400 degrees C. after rolling is sufficient. Hitherto for this kind of plates hardened chromium steel was used.

The only thing required to obtain good results with this metal is an annealing at a low temperature. This can easily be done in long furnaces, where the plates can be annealed by burning pine wood with a long flame.

#### Nickel Steel With More Than 25 Per Cent. of Nickel.

This class of nickel steel has been submitted for several years past to a great many experiments by Ch. Ed. Guillaume. His researches extend over steel with a percentage of nickel varying from 25 to 45 per cent. Among these steels the most remarkable is the alloy with 36 per cent. of nickel. This metal when cast into ingots has its surface covered with small cracks, but the inside of the ingot is perfectly homogeneous. It takes a very beautiful polish and resists almost completely corrosion and oxidation. It can be left for months exposed to a very damp atmosphere, and polished rules made of this metal have been left for hours at a time in lukewarm water

without a stain of rust. The fine division lines marked on such polished rules were not in the least affected by rust after an exposure of several hours in steam at the boiling temperature of water. These characteristics apply only to the polished steel; the metal with its rough surface will be covered with a thin, uniform, easily removable layer of rust after a few days' exposure in steam.

The fact that the polished alloy is so little affected by rust and corrosion makes it quite adaptable to the manufacture of many kinds of rules. This adaptability is still further enhanced by the really small expansion to which the metal is subject at the ordinary variations of temperatures. Mr. Guillaume has, so to say, established formulas by which the expansion of different nickel steels can be established in thousandths of a millimeter. In his experiments he used rules made of the different metals of little more than a meter in length. Their behavior at temperatures varying from 0 to 80 degrees C. was compared to the behavior of a platinum rule subjected to the same treatment.

If we consider a temperature varying from 0 to T degrees, the elongation in thousandths of millimeters will be as follows:

For steel without nickel.....	10.354 + 0.00523 T
For steel with 5 per cent. nickel.....	10.529 + 0.00580 T
For steel with 19 per cent. nickel.....	11.427 + 0.00362 T
For steel with 24 per cent. nickel.....	17.484 + 0.00711 T
For steel with 26 per cent. nickel.....	13.103 + 0.02123 T
For steel with 28 per cent. nickel.....	11.288 + 0.02889 T
For steel with 30.8 per cent. nickel.....	4.570 + 0.01194 T
For steel with 31.4 per cent. nickel.....	3.395 + 0.00885 T
For steel with 34.6 per cent. nickel.....	1.373 + 0.00237 T
For steel with 36.1 per cent. nickel.....	0.877 + 0.00127 T
For steel with 36.4 per cent. nickel.....	1.658 + 0.00320 T
For steel with 36.6 per cent. nickel.....	1.144 + 0.00171 T
For steel with 37.5 per cent. nickel.....	3.457 + 0.00647 T
For steel with 39.5 per cent. nickel.....	5.357 + 0.00448 T
For steel with 44.5 per cent. nickel.....	8.508 + 0.00251 T
Nickel.....	12.661 + 0.00550 T
For steel with 12.4 per cent. nickel and 1 per cent. chromium.....	11.714 + 0.00508 T

The table shows clearly how the elongations vary and that for a 36.1 per cent. nickel steel this variation is extremely small. While the steel works of Impy do not guarantee to regularly make the steel with a variation of only 0.877, they are, however, ready to make an alloy of which, at 20 degrees C., the coefficient of elongation will be less than 1.5, or only one-fifth of the one for platinum.

The great difference that exists in the coefficients of elongation in the series of nickel steels in the above table is put to advantage in the manufacture of well compensated balances for clocks. Its price is considerably lower than the price of platinum. Mr. Guillaume has also pushed his researches into the magnetic properties of this remarkable alloy. Without going into any further details, we may state that he has found that all nickel steels are magnetic at certain temperatures. Those that contain less than 25 per cent. of nickel when once rendered magnetic by cooling lose their magnetism only after they have been heated to a red temperature. They are called irreversible. Steels with more than 25 per cent. of nickel gradually lose their magnetism when heated to a red heat and acquire it again in the same measure when cooled. They are called reversible.

#### Silicon Steel.

The Impy Steel Works in France, in their manufacture of springs for the railroad companies, use to a large extent a special kind of silicon steel containing about 1.20 per cent. of silicon and 0.30 per cent. of carbon. This steel is rolled into flat bars varying between 2½ and 6 inches width and from 3-16 to ½ inch thickness. These bars are annealed and again hardened in water at cherry red until the temperature falls to 300 degrees, and finally annealed at the temperature of the flaming wood, followed by a natural cooling in the air. On account of all these operations the elastic limit in bending, according to the works, reaches the very high figure of 130 kg. per millimeter (184,000 lbs. per square inch), while the ultimate resistance under bending test in the most strained fiber reaches 200 kg. per square millimeter (284,400 lbs. per square inch). The elongation is from 7 to 9 per cent. The metal, besides, is very fibrous, very resistant to a suddenly applied load. The break itself does not happen suddenly, but takes place by a gradual severing of the fibers.

According to Mr. Werth, the former manager of the works, the remarkable properties of this metal with long and silky fibers are due to the final annealing in the flaming wood. The fact is that before this final annealing the steel is very brittle and the fracture shows a fine grain. This transformation is supposed to be due to a dissociation of the combination between the silicon on one side and the carbon and the gases contained in the metal on the other side. This dissociation probably takes place between 400 and 450 degrees C. The carbon is precipitated in the shape of graphite and the gases are diffused through the grains of the primary metal. Silicon has also been used for several years by the Creusot works, as well as the steel works of Saint-Etienne, in the manufacture of armor plates.

The results obtained in these different applications

were so satisfactory that the French navy decided to submit the metal to a full series of mechanical tests. For these tests an ingot was ordered of the steel works at Imphy of which the sound part should weigh at least 2 tons. This steel was made in an acid open hearth. After a test piece had shown a resistance of about 42 kg. per square millimeter (59,738 lbs.) the refining was stopped by throwing about 15 to 20 kg. of powdered coke on the surface of the bath. After this 700 kg. of previously heated ferrosilicon were introduced. Before casting 25 kg. of ferromanganese were added. The metal was analyzed in two different works and was found to contain:

	In the first works.	In the second works.
Carbon.....	0.263	0.430
Silicon.....	1.516	1.651
Sulphur.....	0.425	0.016
Phosphorus.....	0.021	0.16
Manganese.....	0.630	0.815

After having rolled and annealed at a cherry red heat two small test ingots the metal was found to have an ultimate resistance of 75 kg. (106,675 lbs.) and an elongation of 21 per cent. The sound part of the heavy test ingot weighed 2084 kg. One end of the ingot was reduced by forging at a cherry red heat in four heats to an 11-inch square bar. Numerous small scales that formed during the operation were removed with chisels. Continuing the forging to reduce the bar to 10 inches square, cracks showed in one corner during one heat. They were removed and never appeared during the following heats. The other end of the ingot was forged into an 8-inch round bar. The end of this was flattened out to about 1½ inches, and while still warm a 2-inch hole was made into this flat part by means of a mandrel. By the use of successive mandrels this hole was increased little by little to 8 inches diameter without cracking or tearing. Between the 10-inch square and the 8-inch round ends the original ingot was left intact. (Its section was octagonal.) After the round bar had been removed a large hollow space was discovered in the original part. Mr. Werth explained the presence of this hollow space by the fact that the gases contained in the silicon steel are set free, not during the casting but only during the setting of the metal, and the hollow space could easily be avoided by means of a heavy head in refractory material at the upper end of the ingot, which would maintain the upper part of the ingot liquid while its body would set in the mold. This opinion has not yet been verified.

The upper part of the ingot, which had been hammered into a 10-inch square bar, was hardened at a cherry red heat (900 degrees C.) at 2 o'clock in the afternoon. During the process the bar partly split in two lengthwise with a loud detonation. At 3 o'clock on the following morning the split extended over the whole length, separating entirely the two halves with another loud detonation. One of the pieces was thrown to a distance of about 20 inches. Two days after the hardening one of the halves split again, this time transversely. Four days after the hardening the other half split transversely in the region corresponding to the transverse split in the first half. Seventeen days after the hardening the first half again split transversely near its upper end. Eighteen days after the hardening the other half split again transversely in the region corresponding to the second split in the first half. Thirty-nine days after the hardening the last half split again transversely, once near its center and once near its lower end.

Mr. Werth attributed these successive splittings to a too prolonged cooling in water, while it may be due as well to the interior hollow space, which possibly extended to that region. Whatever be the cause, high silicon steel, like high carbon steel, is difficult to harden when in thick pieces. After being simply forged it was noticed that it was also as hard and brittle as high carbon steel.

A series of mechanical tests have given an ultimate resistance of 78 kg. (110,942 lbs.) in one and 67 kg. (95,296 lbs.) in another bar, both lengthwise; with an elongation of 14 per cent. and a stricture of 21 in the first and an elongation of 4.7 per cent. and a stricture of 6 in the other bar. Transverse test pieces had: One an ultimate resistance of 59 kg. (83,918 lbs.); elongation, 2.9; stricture, 7; and the other an ultimate resistance of 77 kg. (109,520 lbs.); elongation, 14.9; stricture, 22. Each fracture was fine grained.

One drop test piece taken lengthwise supported 15 blows of the hammer, the other seven before breaking. When taken transverse the two bars withstood only two blows each. The drop tests on the steel in its original state indicated great brittleness. A first series of tests on hardened and annealed metal showed practically no improvement on the original steel. We do not reproduce the results of these tests, but may state that the steel was far from having the elastic limit that was expected of it. It was brittle and in bending tests it broke without bending. The fracture was fine grained. Thinking that this failure was due to the pieces being too thick to be hardened, the same tests were repeated on thinner pieces, but without any better results. In no case could the fracture be changed from grain to fiber, as had been claimed by the

steel works. After having communicated these results to the makers the naval authorities received a request to send to the steel works a piece of ¾-inch plate as well as a piece of 2½-inch round bar, to be treated in presence of the naval authorities by the workmen of the spring department. The pieces were heated to a cherry red heat in an air furnace and hardened in cold water, from which they were removed before complete cooling in order to avoid breaking. They were annealed with great care in the flame of a furnace and never put in contact with the coal. They were frequently turned over in order to heat them equally, and pulled out of the furnace to be rubbed with a piece of pine wood. At the moment the friction of the wood produced sparks the pieces were removed entirely and left to cool in the open air. After this careful treatment the piece of plate could be bent considerably before breaking and the fracture was fibrous and silky. The 2½-inch round bar, however, broke nearly without bending and the fracture showed fine grain without fiber. This seemed to indicate that silicon steel can be successfully hardened and annealed in thin pieces only.

To more thoroughly investigate the question a new series of experiments were undertaken by the naval authorities. The test pieces included ¾ and 5/8 inch plates and two round bars of 1½ inches diameter. These tests are fully described by the author. We will only state that the ultimate resistance of all the pieces ranged from 118 to 163 kg. per square millimeter (167,836 to 231,841 lbs.), the elongation from 3.8 per cent., with a stricture of 20, in the strongest sample, to 8.9 per cent., with a stricture of 31, in the weakest sample. In one case the stricture was 36. The elastic limit could not be observed, but was undoubtedly very high, as could be judged quite by accident. During one test one end of the test bar became loose at a moment when the strain per square millimeter was 125 kg. (277,792 lbs.); no permanent elongation was noticed. In the drop tests all the pieces bent considerably before breaking, while the plate samples were bent to an angle of about 90 degrees without tearing. All the fractures had long and silky fibers.

No difficulty of any kind was encountered in the machining of any of the samples, and in each case, when hardened and annealed metal was treated, ordinary steel tools could be used, under the conditions that no cooling water be used to prevent the destruction of the effect of annealing on that particular spot.

A certain number of silicon plates of thicknesses varying from 15 to 19 mm. were tested in the same manner as armor plates and under conditions similar to what had been done with the nickel plates. In this case the drop hammer terminated at its lower end like the point of a shell, weighed 326 kg. and fell from a height of 5.50 m. (between 18 and 19 feet). One of the 19-mm. plates was broken at the first blow. All others withstood the tests about as well as the nickel plates. In several cases, on account of the great elasticity or spring of the silicon metal, the drop hammer was sent back far enough to make a second indentation when dropping again. The penetration varied from 11 to 22 mm. In most all cases the drop hammer nearly punched a hole through the plate without any further crack, in the same manner as we have seen happen in the nickel plates. In spite of all the qualities that the metal presents it is as yet little used in practice.

Andrews & George of Yokohama have taken the sole agency for Japan for the Harrison Safety Boiler Works of Philadelphia, the John A. White Company of Dover, N. H., the Acme Machinery Company, the Cleveland Punch & Shear Works Company, and the Oster Mfg. Company, all of Cleveland, Ohio; Mietz & Weiss of New York, and the Nagle Engine & Boiler Works of Erie, Pa. They are agents, too, for a Scotch firm and a Canadian firm.

The protracted law cases which have been pursued in England by the Magnolia Anti-Friction Metal Company, Limited—the London branch of the Magnolia Metal Company here—in defense of their rights to their brand and their business, has been decided in their favor against John Sugden, W. E. Watson, A. G. Brown, the Atlas Bronze Company, Limited, and the Atlas Metal Company, Limited, and others, who were enjoined respecting patents, trade-marks, and from engaging in any anti-friction metal business, with costs and damages.

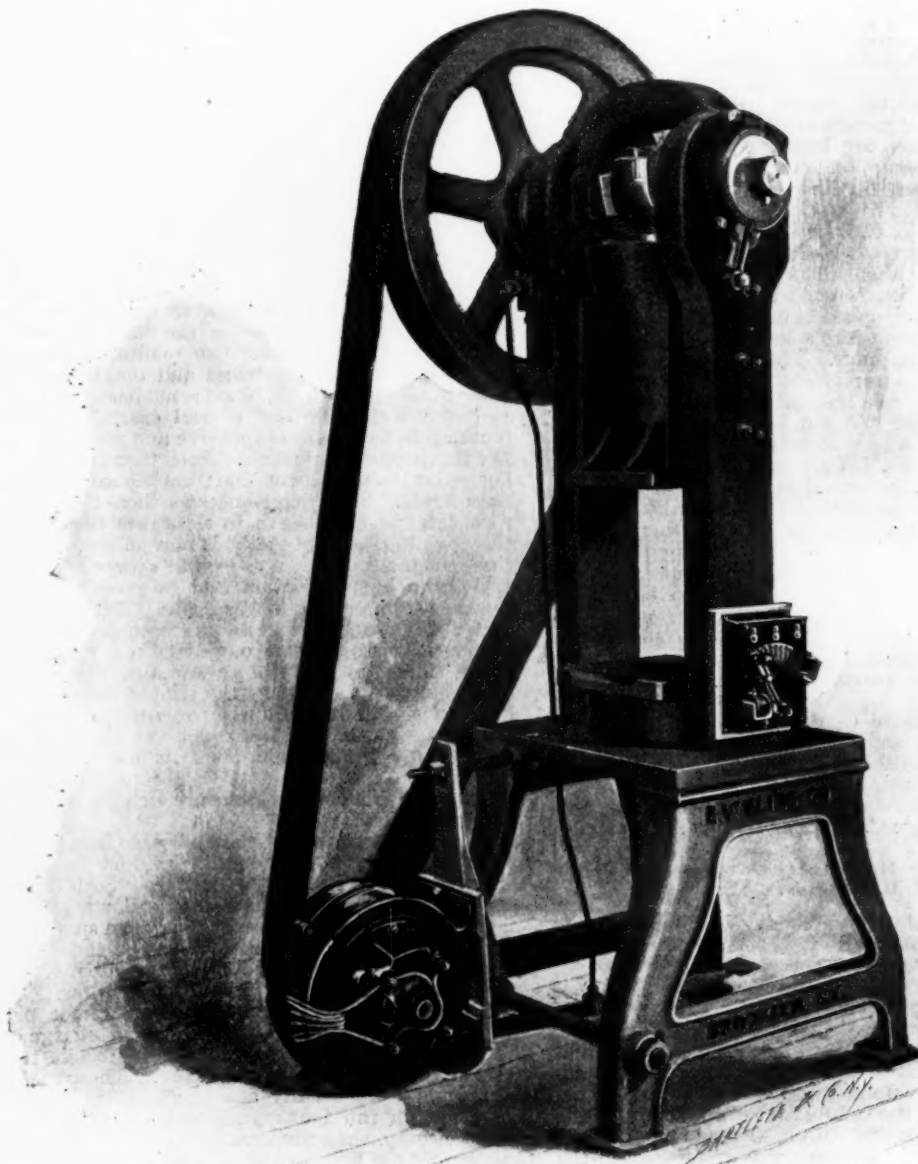
A bridge is to be erected across the Allegheny River from New Kensington, Pa., in Westmoreland County, to Boquet Station, on the West Penn Railroad, in Allegheny County. A new bridge is also to be built across the Allegheny River at Sharpsburg, Pa., to replace the present structure. It will be the fourth bridge built at that place, and work is to be commenced as soon as the weather permits. It is expected to have the new structure finished by January, 1900. The new bridge will be built by the Consolidated Traction Company of Pittsburgh, who own the present structure.



### The Bliss Special Press With Electric Motor.

The machine illustrated in the accompanying half-tone shows the rear view of the No. 52 improved straight sided power cutting and stamping press built by the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y. The machine is fitted with a new steel screw adjustment, which gives a great range for die variations. The shaft is forged steel and carefully fitted with long bearing. Some of the general dimensions are as follows: Width between uprights, 14 inches; distance bed to slide when up, 9 inches; distance between gibs,  $8\frac{3}{4}$  inches; stroke of slide, maxi-

about to be completed, and the necessary arrangements have been made by the St. Anthony Falls Power Company with the General Electric Company, who manufactured and installed the plant now in operation. The hydraulic work and the power house were finished in the spring of 1898, and five three-phase alternators of 700 kw. each and two direct current generators of the same capacity, with the necessary rotary converters and static transformers, were installed. The full equipment of this power plant as originally laid down contemplated the use of eight alternators and two direct current machines of the total capacity of 10,000 horse-power. The present plant has been in full operation since May of



THE BLISS SPECIAL PRESS WITH ELECTRIC MOTOR.

mum, 3 inches; adjustment of slide,  $1\frac{1}{2}$  inches; area top of bolster plate, 14 x 14 inches; floor space over all, front and back by right and left, 41 x 48 inches; weight of fly wheel, 750 pounds; total weight, 3625 pounds.

The press, as shown, is fitted with a 2 horse-power electric motor made by the Sprague Electric Company, 20 Broad street, New York. This motor gives ample driving power and is belted direct to the press, which method is claimed to give better results than if directly geared, as the sudden shock brought upon the motor while punching is not so severe as it would be on the geared motor, there being a slight yielding motion in the belt, which is very desirable in punching presses fitted with electric motors. The motor is so attached to the press that its own weight always keeps the proper tension on the belt.

The equipment of the power house at the lower dam of the Falls of St. Anthony, at Minneapolis, Minn., is

last year, the current being used to drive the street and interurban railway systems of the Twin Cities Rapid Transit Company, who operate the electrical railways of Minneapolis and St. Paul. The additional equipment will consist of three 700-kw. three-phase revolving armature alternators, with rotary converter, step up and step down air blast transformers, and switchboards for the generators and converter. The installation of this machinery will raise the generating capacity to the 10,000 horse-power originally contemplated.

On February 1 the usual bi-monthly conference between James H. Nutt of the Iron Manufacturers' Association and J. T. Shaffer of the Amalgamated Association, to fix the scale for puddling, was held in Youngstown. It was shown that the average price of bar iron for December and January did not warrant any advance in wages.

## The Foundrymen's Association.

The regular monthly meeting of the Foundrymen's Association was held at the Manufacturers' Club in Philadelphia on Wednesday, February 1, the president, P. D. Wanner, occupying the chair.

The Executive Committee's report, after detailing the trusts recently formed in different branches of trade, stated: "We do not find that the makers of iron castings have taken any steps toward the formation of a pool, nor do we think it likely they will, although perhaps such an arrangement, if possible, might be a good thing for the trade. From the fact that there are so many different kinds of castings made it would seem that a combination would be an impossibility. We hope, however, that the time will come when foundrymen will be better paid for their products than they are to-day. At this meeting the matter is to be talked over, not in any way looking to the formation of a trust, but for the purpose of instilling into the minds of foundrymen the fact that they will never get higher prices for castings unless they ask for them. Among the trusts or pools formed it is noticeable that the manufacture of pig iron, fire brick, foundry supplies and equipment is not covered, nor do we think from the present outlook that there is any likelihood of trusts being formed in these lines."

Upon motion of Geo. C. Davis a committee of one was appointed to wait upon A. B. Farquhar of York, Pa., to request his attendance at the next meeting to make an address on the business situation, and particularly in regard to the effects of trusts upon trade in general.

The meeting then went into a long discussion upon the subject of prices of castings. The consensus of opinion appeared to be that better prices should be obtained for foundry products, and that the only way to get them was to stick to prices quoted, and not be beaten down to the prices of a competitor who was willing to cut even to cost price to secure business. While a general agreement as to prices could hardly be aimed at, still it was thought a great deal could be accomplished in all localities by the foundrymen in those localities standing together and supporting each other in an effort to maintain quoted prices instead of resorting to the evil practice of underbidding, a practice which appeared to have been carried beyond all bounds.

The secretary read several letters from concerns at a distance from Philadelphia, all expressing themselves as ready to support any movement tending to raise prices of castings.

The Abram Cox Stove Company, Philadelphia, were elected to membership in the association.

A paper, "The Malleable Iron Industry: Its Development in the United States," which was a continuation of a paper read at the October meeting of the association, was then read by George C. Davis as follows:

### The Malleable Iron Industry: Its Development in the United States.

By 1835 the malleable iron industry had become quite firmly established in this country, as there were known to be in operation at this time five foundries. Three of these, the Boyden & Crockett foundries in Newark and the East Boston foundry in Massachusetts, have been noticed at length in a previous article. One of the other foundries, owned by Stelwagon & Bryant, and which was located at Susquehanna avenue and Germantown road, Philadelphia, was briefly described by John Dessalet in a letter read before this association at the October meeting. This works was a small one, employing 10 or 12 molders, and like some of the other earlier foundries was an offshoot of the Boyden foundry, as two of its men came from there. It began operations in 1833, and manufactured mainly carriage hardware, coffee mills and other small articles. According to the customs of the times great secrecy was observed, especially regarding the annealing, and only one laborer, selected for his ignorance, was allowed in the annealing room. Mr. Bryant was the practical man of the concern, and carried on many experiments. One attempt to add something to the molten iron resulted in an explosion, which cost one man his eyesight. The iron was melted in a small air furnace, which could not have been a very economical fuel, as it is stated that flame often showed at the top of the stack, which was 80 feet in height. Newcastle coal was imported in considerable quantities, and the fire brick (Stourbridge) also came from England. These works continued about five years, when the business was abandoned. Another foundry, which has not heretofore been mentioned, was started at Oak Hill, Greene County, N. Y., by Calvin Adams in 1833. A branch of this concern was established at Westmoreland, N. Y., in 1850, and was called the Oak Hill Branch Malleable Iron Company. The original works at Oak Hill was continued for a few years, when it was moved or sold to parties who formed a corporation at Cossackie, N. Y., where they continued in business for some time. The Westmoreland foundry was operated for a time as a

branch of the Oak Hill Works, but after severing its connection with the parent foundry it took the name of the Westmoreland Malleable Iron Company, by which it has since been known. Of the five foundries here mentioned one was destroyed by fire and two others were given up during the troublous times of 1837. Other concerns very quickly sprang up to take their places, and the expansion of the malleable iron industry in the decade following was very rapid.

Up to the breaking out of the Civil War there were few, if any, radical changes in the malleable iron industry. With the growth of the country the business had gradually extended and foundry appliances have been enlarged and improved. The pig iron was obtained, as in the early days, from the Salisbury district, Orange County, and the Champlain district in New York State, and other furnaces scattered along the Atlantic seaboard from Katahdin in Maine to Stickney in Maryland. About this time there was experienced considerable trouble with the iron owing to changes occurring in blast furnace practice. The warm blast was coming into use, and the natural result was a higher silicon iron, unfitting it in many cases for malleable castings. As technical chemistry was then an unknown science, there was no reliable method of ascertaining in advance whether a lot of iron would answer or not. Some founders met with considerable losses owing to bad castings, which, though annealed soft, were still brittle. Naturally they attributed all their troubles to the iron—a habit, by the way, that is not altogether unknown in the present day. Steps were taken to remedy the trouble, and in some cases men were sent to the furnaces disguised as workmen to find out whether the hot blasts were the sole cause of the difficulties or whether it was due to different ores. One manufacturer sent a man to visit the charcoal furnaces and obtain a sample of pig iron from each. This was sent back to the foundry, melted in a crucible and a trial casting annealed. Such methods as these were expensive and required time before the result could be known. Even then there was no assurance that the next lot of iron from the same furnace would be suitable. Such experiences as these are perhaps worth recording, as they serve to illustrate the changed conditions due to technical methods now in use. At the present time when a founder buys iron he orders it subject to certain chemical specification, and he cares very little where it comes from or how it was made. With the outbreak of the rebellion there arose an increased demand for iron for ordnance work, and the output of many of the blast furnaces which had heretofore supplied the malleable iron founders was absorbed by the United States Government. Fortunately the Lake Superior region had been developed, and as pig iron from this district was found to be admirably suited for malleable work its use rapidly extended. The first Lake Superior iron was brought into this locality about 1862. The lake regions are still the source of supply of charcoal malleable.

One salient feature of the malleable iron industry is the great amount of experimental work done in attempting to improve the process. From the time Seth Boyden began his elaborate series of experiments down to the present day neither time nor money has been spared in putting into operation new methods. Most of these efforts have been directed toward improving the annealing. Of course, we always have had and probably always will have with us the man with the mysterious substance or "flux" which was to be added to the cupola charge or molten iron, and which was to produce malleable iron direct without any subsequent annealing. These metallurgical operations were usually accompanied by some financial operation on the foundryman's bank account, and this being accomplished the man with the flux usually departed just before the heat was to be poured, to be seen no more.

One attempt to introduce a new method of annealing, which was known as the Andrews process, was tried at a number of plants about 1875. The process consisted in passing water gas, which is composed of carbon dioxide, carbon monoxide and hydrogen, over the castings heated to redness. The water gas was generated by passing steam through red hot charcoal in a retort contained in the large retort in which the annealing boxes were placed. Both the retort for generating the gas and that containing the castings were heated from the same source. The plant consisted practically of a small water gas plant inside of a retort or annealing oven, suitable connections, of course, being provided for passing the gas over the castings and providing for its escape. The process could be made to work fairly well, but the mechanical difficulties of keeping the gas pipes which were subjected to high temperatures in good order were very great. Under the conditions which the Andrews process was installed the proportion of carbon dioxide was probably too large, considerable steam was passing through the charcoal, and this with the mechanical difficulties mentioned above caused the abandonment of the process. The reaction on which the decarbonizing process probably depended was the oxidizing action of carbon dioxide. This gas by itself is so active that both iron and graphite will be attacked; in other words, a scaly casting will result. Pro-



vided the carbon dioxide be diluted sufficiently it still is able to oxidize the carbon, but will not attack the iron. At the time the process was introduced the idea was held that the hydrogen combined with the carbon to form some volatile hydrocarbon. These two elements do not unite directly except at the temperature of the electric arc, when acetylene is formed (Richter's "Organic Chem.," p. 153). In this case, as we are dealing with the ordinary temperature of the annealing retort, less than 1000 degrees C., it is highly improbable that this reaction could have taken place. Experiments with the Andrews process were carried out at the works of the Westmoreland Malleable Iron Company. F. M. Metcalf, treasurer of this company, has communicated to the writer his experience with this process. His account of the experiments, which extended over several years, is quite interesting, and I quote his letter, merely omitting some of the names:

"WESTMORELAND, Oneida County, N. Y., Jan. 26, 1899.  
"Geo. C. Davis.

"Dear Sir: Replying to your inquiry of the 25th, will say the water in the Andrews process of annealing was dripped into a funnel and ran through a pipe with a trap or bend in the pipe down through the top of the retort into an oval casting called the heater, which was at the top of the retort just above the box of red hot charcoal which served as a water gas generator. Both received their heat in the same way through the brick of the retort. This was supposed to be sufficient to reduce the water to steam, and to some extent to superheat it, though Andrews did not favor superheating much. Steam passed from the heater into the top of the front of the charcoal box, which was as full of charcoal as practicable, and supposed all to be red hot the same as the annealing boxes and contents when under heat. The steam having no other outlet and the charcoal box being steam and gas tight it passed down through the hot charcoal and out at the bottom back end of the charcoal box into a pipe leading under and by latell connections into the annealing boxes. In passing through the hot charcoal it was theoretically converted into hydrogen and carbon monoxide. Over the opening in the charcoal box where the gas made its exit was an iron basket to protect the outlet from getting full of charcoal. There was very little pressure, as there was nothing but a 6 or 8 inch column of water in the trap to prevent the steam backing out, and I think we had no check valves. I think I suggested higher pressure and hotter steam to Andrews, but he did not favor the steam being very dry, as I think he had tried superheated steam. The original charcoal box was rectangular, and say about 5 feet long. It was charged with charcoal through a luted door at the end and filled as full as possible, always fullest at the back, and after running a day or two was, of course, exhausted to a considerable extent. This reduced the depth of hot charcoal through which the steam was obliged to pass so shallow a mass that it was thought that at that point the steam was not effectually converted, and to that we attributed the scaling to which I referred in my last letter. As Andrews was about to build another such furnace in Newark, and intended to change the shape of the charcoal box to remove this difficulty, we discontinued using the process and awaited the result of the change. An upright cylindrical box was made for the Newark furnace, the idea being merely to keep it nearly full at all times, as was more easily done in an upright box, at least as high up as it got heat, and thus insure a uniform and sufficient depth of charcoal to thoroughly convert the steam into gas of the right kind.

"This effort failed, as you say, and it was thought by Andrews that the diameter of the charcoal box was too great so that the charcoal did not get heated all through, thus allowing steam to pass that did not get converted. We then did not open up on it again, but about two years later upon the introduction of brick backing into the charge of castings in a furnace that had been built in New Haven we started in again and used this method for some months with fair but not entirely satisfactory results. To improve results we then made a new charcoal box of a bottle shape, and heated it to as high a point from the bottom as was practicable, and hoped by thus passing the steam through as great a depth of hot coal as possible to be successful in getting rid of the carbon dioxide and unconverted steam that caused the scaling, which always appeared to a greater or less extent in some part of the charge of the iron, usually at the bottom where the gas first entered. This failing we introduced a condenser, and passed the supposed converted gas through it to take out any unconverted steam before passing the gas into the annealing pots. This failed, and then the whole oven failed, and began to disintegrate to such an extent that we did not continue the effort. We have heard of gas annealing ovens that were claimed to be successful, though we could never place them exactly. If you know of any we would be glad to hear of them, as we have always thought that there ought to be some successful way to improve the process by annealing with gas, but we have not hankered ourselves after any more experimenting in that line at such expense as we did the above.

"As we understand it, the process was first used by —, at —, where we went to see it. We thought we saw it as it was and became victim No. 2; Ballard & Minchin of Newark were No. 3. I went to see their success on the third round of the furnace by Andrews' desire, but he had just completed what I was convinced was the third failure when I arrived, and I never learned whether Ballard survived the great anger under which he was suffering on my arrival or not. Meanwhile Andrews had just received a letter from the — people, saying that they were still using it right along with 'charming results.' Andrews, Minchin and myself went to — to see those charming results, and found they were worse than our worst. Shortly after that — discontinued using the process, and I think the next furnace was built in — shop in — for making steel from malleable iron by recarbonizing and also by arresting the decarbonizing process at the steel point. The — Company were the fourth victims.

"At this distance of time my sensitive feelings will not be hurt by any reference that you may wish to make to the process and our connection with it, and we certainly have no objections to your so referring to such extent as you wish. We hope no one will think, however, that we have not learned to experiment more conservatively than we did then, though we are always open to improvements. I have answered you at much greater length than I intended, and hope if you get tired reading the effusion you will be compensated fairly by laughing at the victims, as I have learned to do.

"Yours truly,

"F. M. METCALF, Treasurer."

The malleable iron industry has undoubtedly been developed to a greater extent in the United States than in any other country. R. A. Hadfield, "Journal B. I. and S. I.," vol. 1, 1897, page 180, says, in his discussion of a paper by G. P. Royston on malleable iron: "The author's paper was especially valuable, too, as calling attention to a line of work to which they in the United Kingdom had not paid sufficient attention. That was the production of malleable iron castings, for in America that industry was carried on on a very large scale. Its production had been so thoroughly specialized that he questioned whether they could touch either the price or quality which were being obtained in the United States. A large user in Sheffield had told him that he had to send for execution in America very considerable requirements, the price of casting being exceedingly low, the quality excellent, and the time of delivery short as compared with English makers."

Mr. Hadfield's remarks were made nearly two years ago, but the conditions he mentions are probably the same now as they were then.

At present there are in this country about 90 malleable iron foundries (Directory Iron & Steel Works), varying in capacity from 1 to 80 tons per day. Nearly all of them are located north of the Ohio and east of the Mississippi. They are quite evenly distributed over that region, though of the New England States Maine and Vermont have none. In the Southern States there is only one, and in the entire West from the Mississippi to the Pacific slope not a single malleable iron foundry exists. By far the heaviest tonnage goes into car castings and farm implements. Since malleable castings are sold so low they have to a considerable extent replaced gray iron castings for many purposes, especially in car building. Broadly speaking, the foundries in the Central West are mainly devoted to the heavier castings, while the Eastern foundries manufacture a very large variety of small articles, such as carriage and harness hardware, pipe fittings, bicycle fittings, ship hardware, parts of textile machinery, typewriters, gun locks, pistol frames, and, to use a somewhat hackneyed phrase, "other articles too numerous to mention."

There are at present at least five coke blast furnaces that produce largely malleable pig. Two of these are in New York State and one each in Pennsylvania, Illinois and Tennessee. So the source of supply is not centralized. The coke malleable differs from the charcoal in being a trifle higher in sulphur and considerably higher in manganese. The difference in sulphur is not great enough to be of any importance where the iron is to be melted in an air furnace, as most of it is for malleable purposes, while the high manganese renders coke iron desirable for mixing the charcoal irons, which are, as a rule, too low in this element. Coke malleable has now been in use for about 15 years, and its consumption is undoubtedly increasing. It was thought at one time that some of the numerous steel casting processes would replace malleable iron. By steel I mean the product of the open hearth or modified Bessemer, and not any of the numerous semi-steels. In the heavier classes of the work this has to some extent proven true, but, as a rule, the two processes are developing along two different lines. The difficulties of preparing small molds to withstand the high temperature of the steels and the more costly plant necessary for its production will probably prevent its use for small or intricate castings.

In closing the writer wishes to acknowledge his indebtedness to Stanley G. Flagg and John Dessalet of Philadelphia, and F. M. Metcalf of Westmoreland, N. Y.

Mr. Davis exhibited a lantern slide showing the sketches made by Mr. Metcalf. Mr. Davis also showed some slides of views of the plant of the Embreeville Estate, Embreeville, Tenn. One view was of the original furnace, and showed the stone slack and old water wheel.

Howard Evans, J. W. Paxson Company, Philadelphia, then showed slides covering a new pulley molding machine and described its operation.

### The Ashland Steel Company.

[With Supplement.]

In the year 1890 the Ashland Steel Company erected a Bessemer plant, which was designed and constructed by the Pittsburgh Iron & Steel Engineering Company. This Bessemer plant consists of two 5½-ton Bessemer converters, a two-high 32-inch train reversing mill, driven by a pair of engines with cylinders 30 x 65 inches. This plant, of 500 tons daily capacity, was put up for the special purpose of making slabs which were to be rerolled into nail plate, to supply the numerous cut nail factories and rolling mills located in that vicinity, and for the Western and Southern markets.

When the wire nails largely superseded the cut nails the demand for slabs fell off somewhat, and in 1897 they decided to put up a modern wire rod mill and a wire mill, and put the product of the steel works into wire rods and wire, to be distributed to the different plants which formerly made cut nails, these plants having been altered to manufacture wire nails, and to be supplied as well to the general market.

The rod mill was designed by the Garrett-Cromwell Engineering Company of Cleveland, Ohio, who also superintended its construction. The end in view was to design a rod mill containing all the latest improvements, the lay out being such as to utilize the initial heat contained in the 4-inch billet, the billet being conveyed from the blooming mill shears direct to the heating furnaces, and into the heating furnaces with the least possible handling. The Allen type of end charging and end drawing furnaces was selected, with automatic conveyor and a continuous roughing train. This has been worked out so that when the hot 4-inch billet leaves the blooming mill shears no one touches it until it has passed through the furnace and onto the conveyor, through the continuous roughing train, and two passes in the 12-inch intermediate train, where the bar emerges in an oval shape, in cross section about ⅝ inch square. This utilizing of the heat in the billet saves at least one-half in the fuel for heating, and does away with all the labor of loading and shipping billets from one section to another, the unloading at their destination, the re-loading again of the billets onto a buggy, the placing of this buggy in its proper position where the billets can be pushed into the heating furnace. Besides this, by way of economy the rods after being rolled and reeled up drop onto a conveyor that delivers the rods right into the cleaning room of the wire mill or cars for shipping, dispensing with the men generally required for this purpose. After the rods are drawn out into wire suitable for making nails or market wire, the latter is loaded at once into cars, and then forwarded to the different wire nail mills in the vicinity, or the general market. The location for export trade is also exceptionally good.

The boilers are of the Cahall type. The large engines, 50 x 60 inches, were built by the Mackintosh, Hemphill Company of Pittsburgh, and the trains of rolls, including the continuous train, were built by the A. Garrison Foundry Company. The equipment includes the noted Roberts inclined floor, reels of a recently devised plan by the Garrett-Cromwell Engineering Company, on which round, square, octagon or half round rods can be coiled without twisting, and also flat strips if required. The plant also has a water works system, installed by F. R. Dravo & Co. of Pittsburgh, Pa., thereby getting their water at the lowest cost.

The rod mill is designed for a capacity of 350 tons per day of 24 hours, and besides making wire rods the mill is so arranged as to make billets from 2½ inches down to 1½ inches square, sheet or tin plate bars, and quite a range of merchant steel bars, especially bars for making railway spikes or bolts, &c., so that this mill is not entirely dependent on one class of material. The labor cost of loading product is minimized with the aid of an overhead crane. Fuel being low, pig iron can be produced as low as in the Pittsburgh district, the owners of six blast furnaces, within 3 miles, being interested in the steel company. There is also a magnificent waterway for transportation, not only to the Southern States but to the North and West, as the empty coal barges going in that direction can be utilized, and so on to the sea, for

export trade. Having all the advantages above mentioned, the Ashland Steel Company, it is believed, will acquire a position as a producer of steel wire rods, billets and sheet and tin plate bars. The officers of the Ashland Steel Company are I. A. Kelly, president; B. H. Burr, secretary; E. C. Means, vice-president, and L. R. Putnam, treasurer.

### THE WEEK.

The gradual decline in the building of sailing vessels is being severely felt in the once flourishing cotton duck industry of New England. Some years ago there was a large demand for this material in the manufacture of sail cloth, but the consumption in this direction has fallen off so materially of late years that some of the largest manufacturers of cotton duck are now running only 20 per cent. of their spindles.

The once famous Mississippi steamboats are likely to experience a revival, a plan being on foot to inaugurate a system of packet steamers for passenger and freight service, to run daily between St. Paul and New Orleans, touching at the most important intervening points. The boats will be fast, be built of steel, and will draw so little water that the runs will be made on schedule time in the lowest water.

It is announced that the Ottawa & Parry Sound Railroad Company of Canada have decided to build two new steamships of larger dimensions than any hitherto employed in the lakes trade, to ply between Parry Sound and Chicago as feeders to their railroad lines. The vessels will have immense cargo and grain carrying capacity, and are also to be equipped for passenger traffic.

The American Electrical Vehicle Company of Chicago have received orders from Bombay, India, for automobile pleasure carriages amounting in value to \$26,000.

The Australian Colonial premiers, after a prolonged conference in Melbourne, Victoria, reached last week a unanimous agreement on the question of Australian federation, which, it is said, insures the success of the federation movement.

Advices from Valparaiso state that the copper output of Chili has increased considerably in the past month. The copper boom is said to be stimulating business in that country in every direction.

The directors of the Georgia & Alabama Railroad Company have decided to build at once a big steel drawbridge across the Savannah River, between the city of Savannah, Ga., and Hutchinson's Island, where the company's extensive new terminals are to be located.

The United States cruiser "Buffalo" reached Manila last week after a voyage of 54 days from New York, via the Suez Canal, a distance of 11,700 miles.

The first shipment of oil in bulk to Canada was made a few days ago from Philadelphia, the steamship "Maverick" having sailed for Halifax, N. S., with over 500,000 gallons of refined petroleum.

A bill compelling foreign corporations to charter in North Carolina has been passed by the Legislature of that State.

A movement to consolidate the soap manufacturing concerns of the country is being discussed. The capital of the proposed combination has been announced as \$50,000,000.

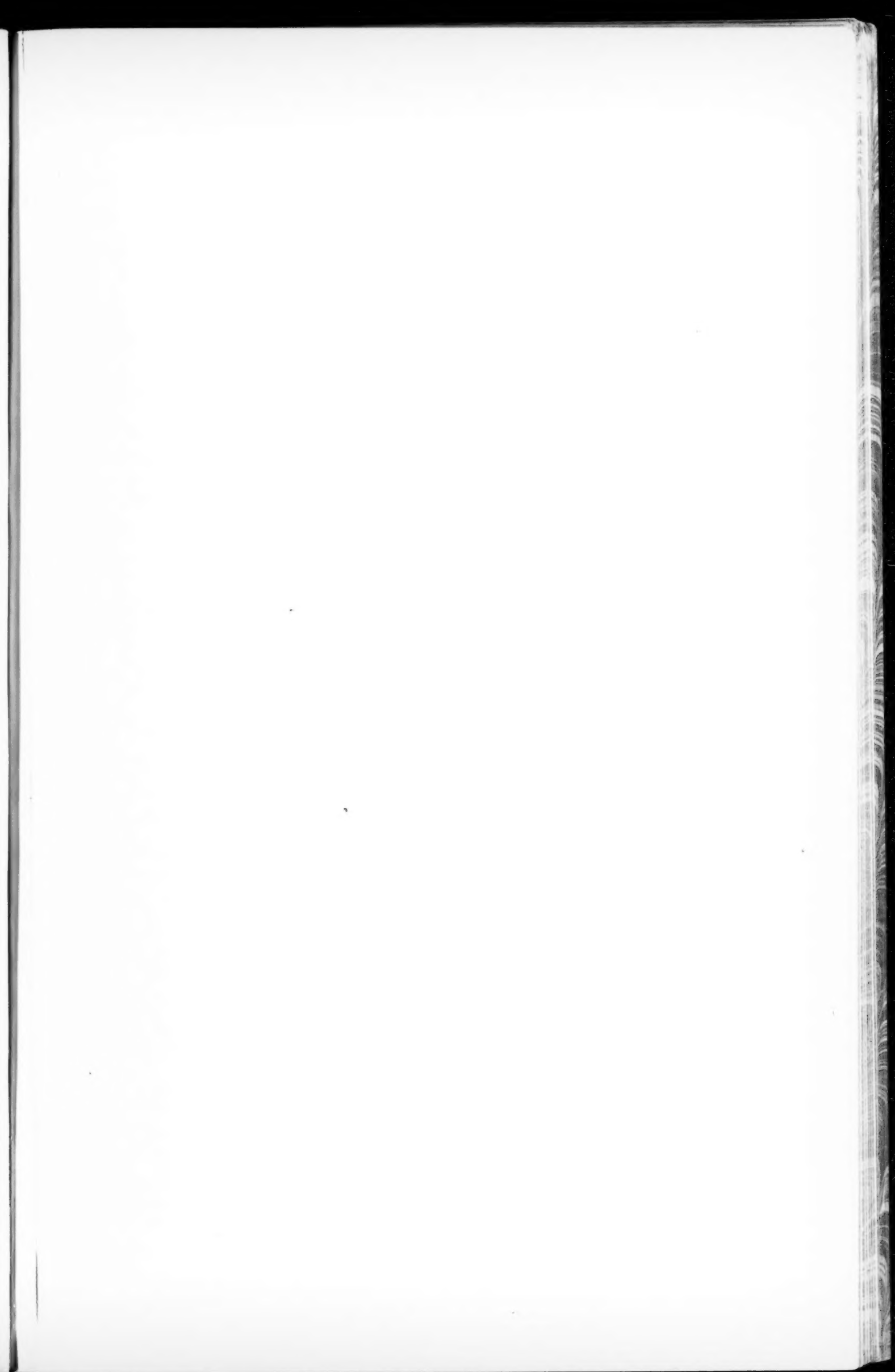
A San Francisco press dispatch says that John D. Spreckels, president of the Oceanic Steamship Company, has come East to obtain estimates and probably to place orders for the construction of three steamships of 6000 tons and 17 knots speed for the Hawaiian and Australian trade. It is estimated that the new vessels will cost about \$725,000 apiece.

The Commercial Club of New Albany, Ind., are considering a proposition made by Chicago capitalists to establish a large structural iron works and a shipbuilding plant in that city. The offer is said to be contingent upon the willingness of the property holders of New Albany to indorse \$1,000,000 worth of bonds.

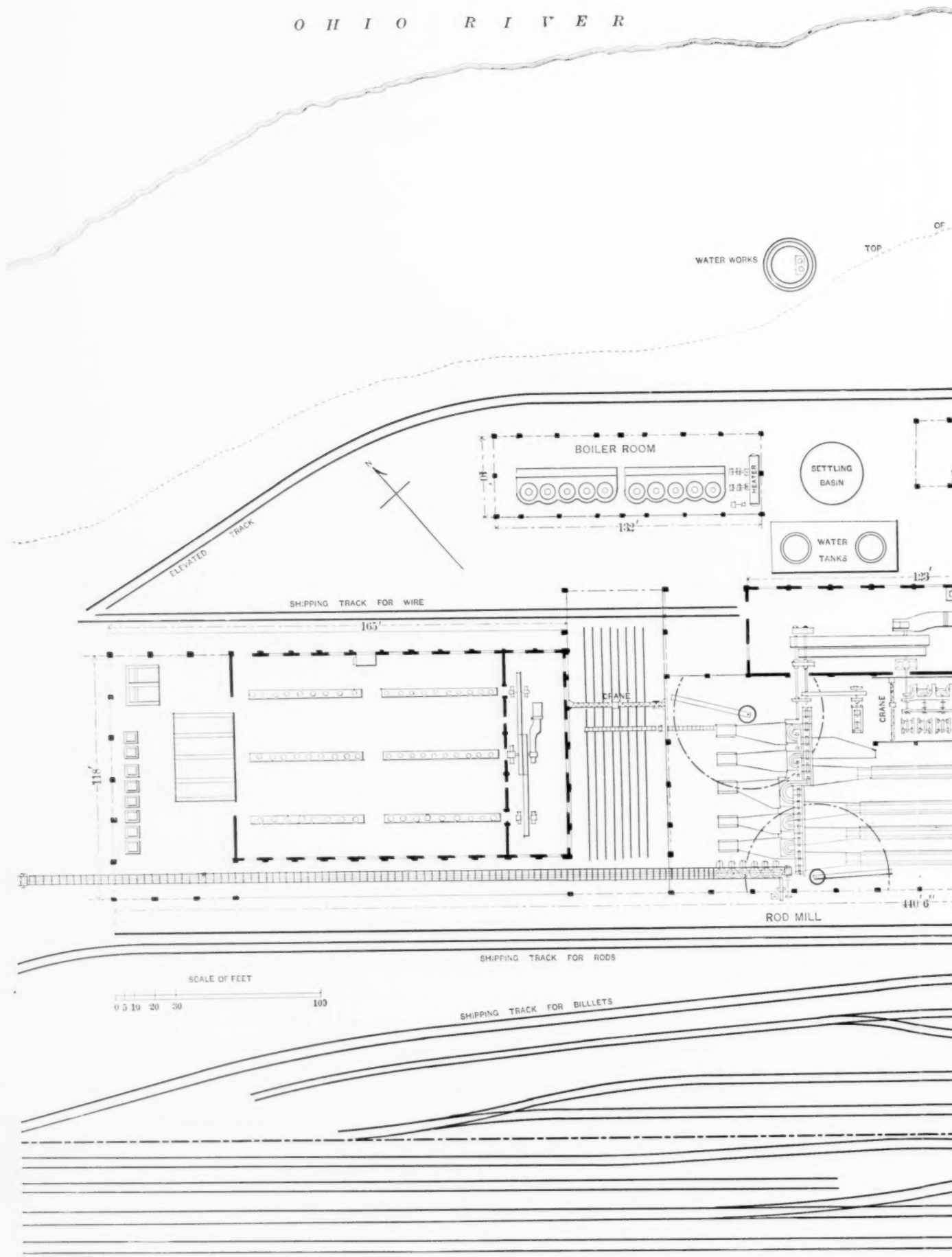
Preparations are being made for the keel of the new United States battle ship "Maine" to be laid at Cramps' shipyard, Philadelphia, on February 15, the first anniversary of the destruction of the former war ship of that name in Havana harbor.

An offer has been made by a local electrical syndicate to the Board of Control of the city of Toronto, Canada, to light the city streets and supply energy for manufacturing purposes at the rate of 1 cent per horse-power per hour. The capital of the company is \$5,000,000, and they offer, when their dividends reach 10 per cent., to light the streets at cost price. The tender has made quite a sensation in the electrical world.



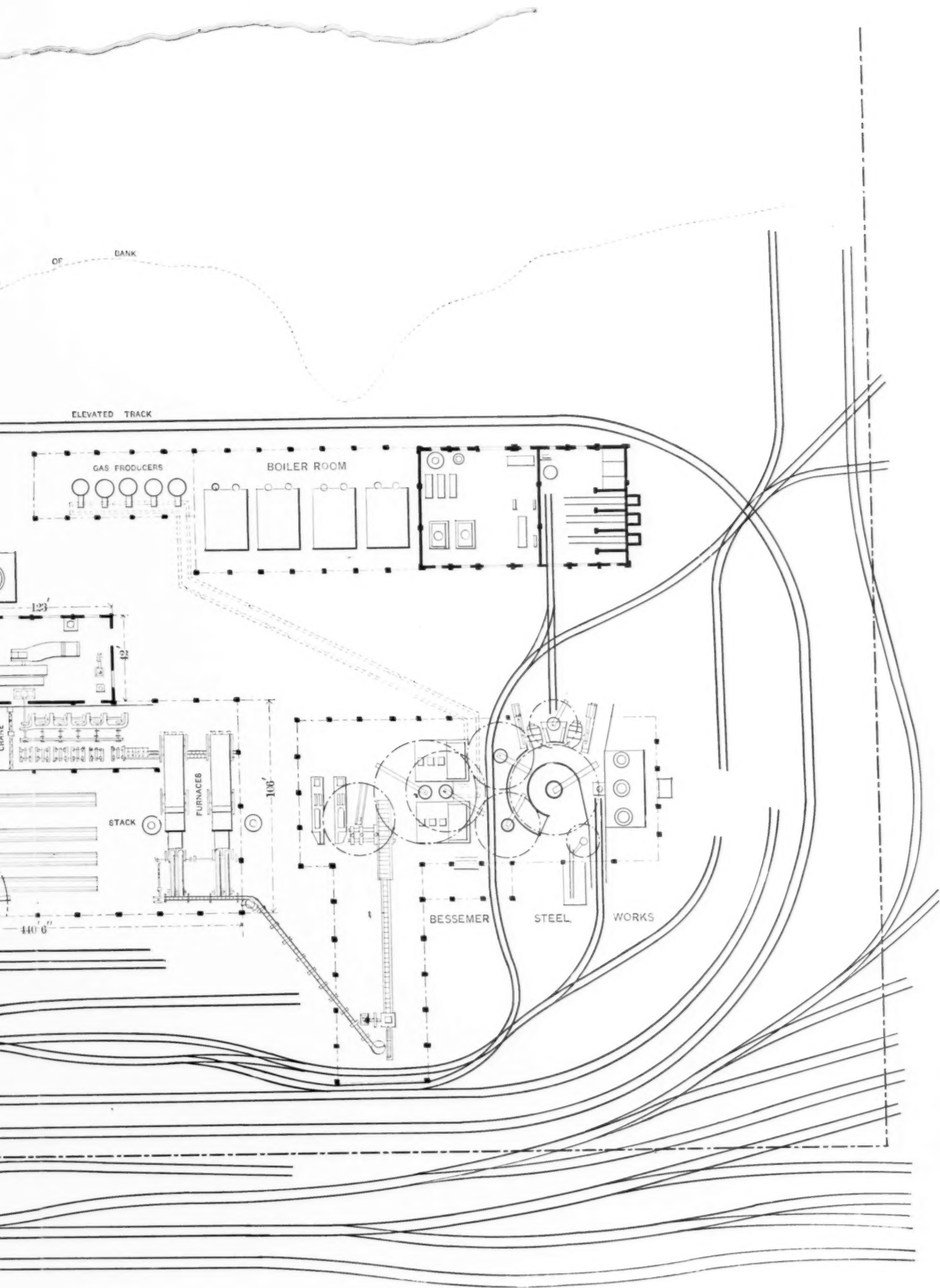


O H I O R I V E R



THE PLANT OF THE ASHLAND ST





ND STEEL COMPANY, ASHLAND, KY.





# The Iron Age.

New York, Thursday, February 9, 1899.

DAVID WILLIAMS COMPANY,	PUBLISHERS.
CHARLES KIRCHHOFF,	EDITOR.
GEO. W. COPE,	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	HARDWARE EDITOR.
JOHN S. KING,	BUSINESS MANAGER.

## The Cheapness of Money.

"We need not make an apology when we submit below a letter which has passed between two firms connected with the trade, since it deals with matters of general and absorbing interest:

"We note what you say in regard to low price on iron as well as on cotton. We quite agree with you that iron has been low, and if everything had been correspondingly low there would be no particular occasion to complain of the price of cotton. But taxes are higher, thanks to politicians, doctors' bills are just as high as ever, rope is 100 per cent. higher than it was when cotton was 50 per cent. higher than it is now, and while cotton is going down, and wheat with it, you are putting up your goods and all other lines are going up. It is only a question of time when this connection will break. With less money for the farmer's products North and South, the factories have got to make up their minds to sell less goods if they advance prices. If that is what must be done then the people will have to go back to plowing with wooden sticks and eating with their fingers, as they used to do in the good old days. We take *The Iron Age*, which is a good old standard paper, and which we read with pleasure, especially its financial articles, although we are on the other side of the fence. During the last Presidential campaign this paper lauded the merits of scarce money, and denounced the idiots and fanatics who wanted 'cheap money,' but as soon as high prices for wheat began to pour money into the country and stimulate manufacturing industries *The Iron Age* announced that after all plenty of money might be a good thing, and that prosperity for the country had begun in the wheat field instead of in the mechanic's shop. Since then the expenditures in the war have poured a vast amount of golden blood into the veins of commerce in this country, and we were very much amused on taking up *The Iron Age* the other day to read its leading article headed 'Cheap Money,' and see it announce that cheap money was the greatest thing on earth, and that it was fructifying commerce in this country with the rains of prosperity. If diversions like this are only numerous enough there will not be a corporal's guard left to vote for scarce money and McKinley at the next election."

This sharp but not ill-natured criticism of financial comments by *The Iron Age* moves us to say in reply that we have never "lauded the merits of scarce money," nor do we think that we ever denounced as "idiots and fanatics" those who desired cheap money, though we regard their demand as absolutely irrational, contrary to all human experience, and hold that their success would be injurious in the last degree. We have not advocated scarcity of money, though the importance of the volume of money is vastly exaggerated by inflationists, whether greenbackers or silverites, but a sudden contraction of the currency would undoubtedly inflict great injury upon business. One of the objections to inflation

is that it would drive gold out of monetary use, and as there is more than \$950,000,000 of gold coin and Treasury bullion now serving as money in this country, a measure which should suddenly withdraw all this from monetary use would be a terrible contraction and a great misfortune to the country.

If it is not too much interfered with by a meddling government any community will provide itself with the instruments of exchange, as it will with the instruments of production and transportation. The coin of a country is not provided by the Government, but by the private citizens who deposit bullion at the mints, not to have value added to it, for the bullion is worth as much uncoined as coined, but to have it put into convenient shape for monetary use. For the Government to provide coin beyond the amount made from bullion brought to the mint by individuals is superfluous and wasteful, for it locks up an unnecessary amount of wealth in currency, which is no better than to lock it up in plows or in freight cars or in machinery that is not needed. If the Government inflates the currency with paper it must keep that paper always redeemable in that which the notes purport to be equal to, or men will only take them at a discount, which was the fate of greenbacks and Confederate notes during the Civil War.

The inflation that was proposed in 1896 was an inflation of silver coins which bore the name of dollar, but were of much less value than the gold dollar which has long been in fact the commercial unit or measure of values in this country, and the substitution of the cheaper for the dearer dollar would not only drive all the gold out of monetary use, but it would work a vaster confusion in the world of trade than a substitution of 8 ounces for a pound and 18 inches for a yard and a pint for a quart could.

Nearly all the wrong thinking about money is due to the unconscious use of words in two or more senses. When it is said in Wall street that money is cheap it is meant that the rate of interest is low, and that is of advantage to every man who has to hire money, which is practically the whole business community. But what was meant in 1896 by cheap money was money that would buy very little; money of which it would take \$2 to buy what \$1 will buy now. That is a totally different thing, and of advantage to no one except persons who borrowed the dear dollars and could repay in the cheap ones. All the money a man takes he also parts with; he is as much of a buyer as a seller; it is of no advantage to have his wages doubled if every expense is also doubled.

Our critic complains that taxes are advancing, doctors' bills are not declining, and rope is twice as high as it was when cotton was worth a half more than it is at present. This situation could not possibly be changed by the substitution of cheap money in the sense of dollars of half the value of the present dollars. If you double the price of cotton by halving the unit of measurement of values you will double all other prices—taxes, doctors' bills and rope prices. The raisers of cotton and wheat cannot have the measure of value changed for their benefit without changing it also for every one else, and when all prices have been doubled everything will be relatively as it is now.

If the prosperity of the country has been promoted by higher prices for grain, paid by Europe, or by an addition of gold from Europe to the stock of wealth in the country, it by no means follows that an increase of the nominal currency by issuing more paper money or by turning the silver bars in the Treasury

into coins would have produced the same effect. In one case there is a real addition to the wealth of the country; in the other there is a mere imitation of it.

Cheap money that is beneficial to trade—that is, money that can be hired cheaply—is promoted not by inflation, but by everything that encourages the possessors of wealth to loan it. Certainty that the measure of values will not be changed, that a man who lends gold dollars will not be repaid in silver dollars, is one of the best means of making money cheap in this sense. For many years the rate of interest has been declining; men who live on their investments have had their incomes curtailed, while manufacturers and merchants have been able to borrow at lower terms. This is a result of increasing wealth and greater certainty as to the measure of values. This is a beneficent change, but the substitution of a cheaper dollar or a lighter pound for the present units would be a totally different thing.

#### Possibilities of the Automobile.

After due allowance has been made for the claims of enthusiasts in regard to the coming of the automobile, and the promises of inventors and promoters of the great things to be expected from the new means of transportation, it still seems safe to assume that the practical introduction of the horseless carriage has been accomplished. Here we may make note of the fact that, nowadays, whenever a new factor in the comfort or in the service of man is once fairly introduced, its use rapidly becomes widespread. The bicycle affords a notable illustration of this tendency. But while millions of bicycles have been made and sold, it remains true that for the greater part bicycles are owned for purposes of recreation, if not of sport, whereas the automobile evidently will become popular for traffic purposes as well as for a pleasure carriage. Already there is talk of horseless vehicles taking the place of all the trucks on New York streets. How many there may be of these cannot be stated, but the late Colonel Waring, while at the head of the Street Cleaning office, used to estimate that there were all the way up to 50,000 of them here. Of course, the same number of automobiles would not be needed to render the same amount of service to commercial New York. As soon as a really practical vehicle of this class is brought out it will be found possible to convey by its use very much more freight than the load usually carried by trucks, express wagons or delivery wagons from the great stores. Not only this, but the rate will be so much greater that in many cases two loads can be hauled where only one can be where horses are employed.

Taking into further consideration the greater amount of space in the streets that would be made available by the retirement of all the horses, to say nothing of the much neater condition of the streets and the better sanitary conditions which should result therefrom, it is clear that the public will welcome the new vehicles, whatever may be, in their ultimate development, the type of construction or the motive power used. The salient questions are whether the new vehicles are practical, from the mechanical point of view, and whether they can be operated at a profit. The number and the character of the investors already in the field forces the conviction that somewhere it has become deeply lodged in the minds of capitalists that the new proposition has merit, and that the dray horse must follow the street car horse into retirement.

It is a matter of interest to the iron and steel trades

that the new vehicles will be made largely of metal, instead of wood, which has been the principal material used in horse driven vehicles since prehistoric days. The iron trade will profit from the need, not only of a great amount of metal for the construction of the new class of vehicles, but also of much more for machinery and appliances, both for their manufacture and for the maintenance of central stations, whether the greater number of motors be charged with electricity or with compressed air. Furthermore, this increased use of metal will be permanent. The automobile will not be a mere fad. If the new trucks and heavy wagons once come into general use there will be no return to horse drawn vehicles for the same purpose—at least not before Broadway goes back to stage coaches as a substitute for electric cars.

The evolution of the delicate mechanism involved in the propulsion of the automobile and the machinery required in the production of its working parts will afford desirable opportunities for American inventors and fresh laurels for our mechanical engineers. The large development of the use of automobiles in America—where there are so many populous cities, so much wealth and so much traffic, and no deep seated prejudices against innovations—may lead to greater progress in their construction than in any other country, thus giving our people an opportunity to supply a goodly share of the world's demand for these vehicles. There is no branch of manufactures to-day in which we have begun to develop an export trade in which there is any reason to expect a falling off, and particularly in the metal industries. On the contrary, there is every reason to expect an increase in all lines, and every step in progress abroad in the use of the automobile will make new opportunities for foreign trade for our manufacturers, whether or not they attempt to take advantage of them.

The automobile can hardly fail to cut an important figure at the Paris Exposition of 1900, while it is to be hoped that the specimens of American manufacture in this line will not suffer by comparison with any other. Should our automatic vehicles prove to be markedly superior to any others, they would become one of the most impressive and most widely quoted mediums, of all that might be found at the big fair, of advertising American ingenuity and skill to the rest of the world.

#### PERSONAL.

The trustees of Columbia College have changed the title of Prof. R. S. Woodward from Professor of Mechanics to Professor of Mechanics and Mathematical Engineering. W. L. Cathcart has been appointed Adjunct Professor of Mechanical Engineering.

James Baker of Allegheny, Pa., has resigned as vice-president and manager of the Baker Forge Company of Ellwood City, Pa.

Henry J. Conant, manager of the Boston office of Westinghouse, Church, Kerr & Co., has been promoted to act as one of the foremost members of the staff of the concern. He was graduated from the Massachusetts Institute of Technology in 1887.

W. W. Churchill, who was graduated from Cornell in 1889, and who has been connected for nine years with Westinghouse, Church, Kerr & Co., has been appointed to the position of mechanical engineer.

Before leaving Ellwood City, Pa., for his new field of work as manager of the Laughlin Tin Plate Mills, at Martin's Ferry, Ohio, J. R. Phillips, late manager of the Ellwood Tin Plate Works, was the recipient of a most flattering testimonial of esteem from the employees of the works, of which he had been the manager for five years. The occasion was a public reception at the Opera House, when a handsome silver tea service, suitably inscribed, and a gold charm were presented to Mr. Phillips by the members of Ellwood City Lodge of the Amal-



gamated Association of Iron, Steel and Tin Plate Workers. Edward Martin succeeds Mr. Phillips at the Ellwood City Works as manager.

### Pig Iron Freights.

We publish below the rates of freight established by the Louisville & Nashville Railroad on pig iron from Southern furnaces.

Pig Iron Freights Issued by Louisville & Nashville R. R. Co.

To	From Birmingham, Ala. District.	Sheffield, Florence, Decatur, Ala., Rockdale and Napier, Tenn.	Big Stone Gap, Va.	Middlesborough, Ky.	Chattanooga, Tenn.
Allentown, Pa.	497	507	405	430	472
Baltimore, Md. (rail and water)	360	370	299	324	372
Bethlehem, Pa.	497	507	405	430	472
Boston, Mass. (rail and water)	410	432½	361½	386½	431
Chester, Pa.	442	452	369	394	431
Contesville, Pa.	467	477	375	400	442
Dover, N. J.	502	512	410	435	477
Edgemoor, Pa.	442	452	369	394	431
Harrisburg, Pa., district	406	416	314	339	381
Johnstown, Pa.	440	415	365	385	415
Lancaster, Pa.	426	436	334	359	401
Middletown, N. Y.	560	535	485	505	555
Newark, N. J.	502	512	410	435	477
Newport News, Va.	275	285	...	...	...
New York, N. Y. (rail and water)	375	385	314	339	...
Oswego, N. Y.	480	455	405	425	455
Perth Amboy, N. J.	502	512	410	435	477
Phoenixville, Pa.	467	477	375	400	442
Portsmouth, Va. (on through export shipments to foreign countries, except Mexico and Canada)	...	...	...	185	...
Pottsville, Pa.	467	477	375	400	442
Scranton, Pa.	502	512	410	435	477
Sparrows Point, Md.	436	446	344	369	411
Steelton, Pa.	411	421	319	344	386
Syracuse, N. Y.	480	455	405	425	455
Troy, N. Y.	540	515	456	481	515
Utica, N. Y.	520	495	445	465	495
Wilmington, Del.	442	452	369	394	431
New England points	583	593	491	516	558
Ashland, Ky.	305	280	255	230	255
Battle Creek, Mich.	380	355	330	315	355
Brazil, Ind.	325	300	275	250	300
Buffalo, N. Y.	425	400	375	350	375
Chicago, Ill.	350	325	300	300	325
Cincinnati, Ohio	275	250	200	185	225
Cleveland, Ohio	370	345	320	295	320
Columbus, Ohio	330	305	280	355	380
Connersville, Ind.	325	300	275	275	300
Dayton, Ohio	310	385	260	335	260
Denver, Col.	967	922	1,069	967	967
Detroit, Mich.	380	355	330	305	330
Dubuque, Iowa	395	370	395	370	370
Elwood, Ind.	325	300	275	275	300
Findlay, Ohio	360	335	310	285	310
Indianapolis, Ind.	325	300	275	275	300
Kansas City, Mo.	500	455	500	500	500
Leavenworth, Kan.	500	455	500	500	500
New Castle, Pa.	370	345	320	295	320
Niles, Ohio	370	345	320	295	320
Omaha, Neb.	550	505	550	550	550
Ottawa, Ont.	600	575	560	525	550
Pittsburgh, Pa.	410	385	360	335	360
Pueblo, Col.	967	922	1,067	967	967
Saginaw, Mich.	420	395	370	365	395
Springfield, Ohio	330	305	280	255	280
Springfield, Ill.	350	325	340	320	325
St. Louis, Mo.	325	280	325	300	300
St. Paul, Minn.	535	510	535	510	510
Terre Haute, Ind.	325	300	275	275	300
Toledo, Ohio	360	335	310	285	310
Wheeling, W. Va.	410	385	360	335	360
Youngstown, Ohio	370	315	320	295	320

These rates apply to carloads of a minimum of 17½ tons of 2268 pounds.

### Pacific Coast News.

SAN FRANCISCO, January 30, 1899.—We have now had about a week of the finest weather that we have ever had in this State; in fact, never since white men have entered the country has the weather been so warm in January. For about three days during the week now closed we have had sultry days as warm as the average summer days. In consequence vegetation has been growing rapidly, and some fear that cereals will take too great a start and be subsequently injured by frosts. The same fear exists as far as the fruit trees and vines are concerned, but none of this may happen. A few years ago we had weather during the whole month of February similar to that which we now have, though without such warm days, and nothing untoward happened that year. I rather think that the present fine weather will be followed by copious rains. All this makes for a bright prospect from a business standpoint, and as usual when business matters generally are brisk the iron and metal trades come in for their share. At present matters are a little quiet, as they always are in January, except in particular cases. The clearing house exchanges, which had been somewhat less than those

of 1898 for the same periods, have begun to turn in favor of this year, showing an increase. The export business continues good, especially to the Hawaiian Islands, but there have been of late very heavy shipments of foreign—English—machinery to them. Recent shipments exceed \$100,000 of this English machinery. This is, of course, sent in anticipation of the operation of the United States tariff. After this takes effect San Francisco and Eastern manufacturing centers will supply this machinery. We may report the foundry business as being now very good. There are, however, some exceptions to the rule. In the matter of manufacturing, a leading stove manufacturer reports that business has been very brisk with him during the whole of the year past.

The tin plate combine has at last made up its mind on prices and as a consequence the price of the American article has been advanced to \$3.75 in this market. The price of English tin plate has been correspondingly advanced to \$4.50. The advance is not very great, and though it is not as great as it might have been, it cannot be said to be received with especially good grace. There has been an immense development of the fruit and salmon canning interests on this coast during the past few years, and it has no doubt in some measure been owing to the cheap tin plate and cheap tin, which have been exceptionally low during that period. There will probably be a good demand for both in the coming year. If no untoward frosts occur a big fruit crop is a certainty, and, on the whole, the salmon packing business keeps on growing all the time, though the various syndicates will probably limit production. A good deal depends on the run and the cheapness of salmon, and with a heavy run at the proper time a heavy pack can always be looked for. The advance in tin plate has been more than paralleled by that in pig tin. After going up to 19 cents to 19½ cents, and being very strong, it has suddenly shot up to 25 cents to 26 cents. This is the highest now that it has been in a long time. There have been great extremes in the price during a year or so. The imports of pig tin in 1898 were as follows:

	Pounds.	\$
British East Indies	1,782,456	\$378,570
Australia	884,993	131,177
Dutch East Indies	24,369	3,221
China	1,274	33
<b>Totals</b>	<b>2,703,012</b>	<b>\$378,570</b>
1897	2,339,503	295,123
1898	2,016,976	232,717

There appears to be a steady increase in the quantity used and the value for the past three years. In 1897 the imports were from British East Indies and Australia exclusively, while this year there is added the Dutch possessions as a source of supply. Australia used to be our principal or sole source of supply. Besides its use in the canning trade the demand for general manufacturing purposes all over the coast is increasing largely. The sale of tinware on the coast is large and the manufacture is proportionately prospering. Some firms have a couple of hundred hands engaged mostly in its production.

I have just completed making up the statistics of the exports of iron and steel and the manufactures thereof for the year 1898. They are as follows:

Machinery	\$1,558,066	Sewing machines	\$30,579
Nails, 200,485 kegs	300,893	Stoves	29,173
Castings	254,439	Type-writers	20,985
Hardware, various	295,723	Scales	8,440
Iron pipe	182,616	Stationary engines, 3	5,971
Boilers, etc	119,173	Printing presses	5,820
Pumps and pumping machinery	106,568	Cutlery	5,473
Steel rails, 1,991 tons	62,450	Safes, 37	5,204
Tools	43,775	Pig iron, 25 tons	1,516
Firearms	40,705	Car wheels	1,195
Bar iron 1,808,288 lbs	37,212	Locks	812
Wire, barbed, 1,314,661 lbs	33,360		
		<b>Total</b>	<b>\$2,883,674</b>

This is quite a respectable figure for San Francisco, and it has increased considerably during the past two or three years. It is increasing still. Especially is this so in the direction of the Orient. The nail trade is almost entirely the growth of these eventful years. Not only have the victories of our forces opened up to us new portions of a great commercial empire, but our trade in that direction has been gradually expanding, irrespective of it, for a year or so. We have made shipments of machinery to Corea, Asiatic Russia, &c., and small shipments to a few other points, which will doubtless pioneer the way to a larger and a better trade. It will be noted that in this list there is very little by way of raw material—barely a few tons of pig iron; all else is in the way of manufactured product. This is, of course, as it should be. But how is San Francisco represented in it? Very well, all things considered. It is true that most of the nails and some of the machinery are shipped overland in transit, but the greater part of the rest of the shipments are done by San Francisco houses, many, of course, representing Eastern goods imported to this market from the manufacturing centers of the East.





# THE NATIONAL STEEL COMPANY.

The negotiations which have been progressing for some time between interests identified with the American Tin Plate Company and a number of large steel works in the Central West have now reached a point where matters are settled so far as the principal outlines are concerned.

While the original project was undoubtedly that of controlling the supply of tin plate bars for the American Tin Plate Company, the consolidation of the plants and interests, while accomplishing that, is of much greater significance and has a much more general bearing on the steel industry. It is understood that the American Tin Plate Company have some time since made a five years' contract with the Carnegie Steel Company, Limited, for an exclusive supply of tin plate bars, and that the product in this department of the Federal Steel Company has been taken care of. Important though this phase of the subject may be, it has features of wider scope. In fact it brings into the field a new corporation ranking in influence and in power very close, in certain branches, to that of the Carnegie Steel Company, the Federal Steel Company, the American Steel & Wire Company and the American Tin Plate Company.

The National Steel Company, as the new concern will be named, will probably consist of a consolidation of the following large plants in the Central West:

THE OHIO STEEL COMPANY, Youngstown, Ohio.

THE SHENANGO VALLEY STEEL COMPANY, New Castle, Pa.

THE BELLAIRE STEEL COMPANY, Bellaire, Ohio.

THE ÆTNA-STANDARD STEEL & IRON COMPANY, Bridgeport, Ohio.

KING, GILBERT & WARNER, Columbus, Ohio.

BUHL STEEL COMPANY and SHARON IRON COMPANY, Sharon, Pa.

UNION IRON & STEEL COMPANY, Youngstown, Ohio.

WHEELING STEEL & IRON COMPANY, Wheeling, W. Va.

THE OLIVER INTERESTS in the Oliver Iron Mining Company and in coke regions and in the Rosena Furnace.

So far as the Wheeling Iron & Steel Company are concerned it is not quite sure that this property will be included. The negotiations with the Union Iron & Steel Company of Youngstown have progressed to the point where they will be probably included.

The Oliver interest is under option, although some doubt is expressed as to whether the ore property can be transferred.

Some conception of the magnitude of the operations of these concerns may be obtained by the fact that

## The Steel Capacity is 1,800,000 Tons,

nearly the whole of it being acid Bessemer steel, the only exception being that of the Buhl Steel Company, who produce basic open hearth steel, although in this case the steel capacity is not up to the output of the modern blooming mill and tin plate and sheet bar mill, so that the concern have purchased steel ingots in the open market.

The following is an estimate of the daily capacity for producing steel, in the form of tin plate bars, sheet bars and billets:

### Capacity of Tin Plate Bars, Sheet Bars and Steel Billets.

	Tons per day.
Ohio Steel Company.....	1,500
Shenango Valley Steel Company.....	1,200 to 1,400
Ætna-Standard Iron & Steel Company.....	1,000 to 1,100
Bellaire Steel Company.....	800 to 900
Wheeling Steel & Iron Company.....	600
King, Gilbert & Warner.....	500
Buhl Steel Company.....	400
Total daily capacity.....	6,000 to 6,400
Annual capacity.....	1,800,000 tons.

It is reported that these plants have made during the past year about 350,000 tons of tin plate bars and 150,000 tons of sheet bars. Of course, in the case of such plants as the Ohio Steel Company the quantity of sheet and tin plate bars produced can be made to vary with the requirements. In the case of the Shenango Valley Steel Company

and of the Buhl Steel Company the equipment consists of continuous mills specially designed to roll this class of product. In the case of the Ætna-Standard Company the company are just completing a new modern Bessemer plant, which it is expected will make its first blow in April.

### The Ore Supply.

Since it is regarded as a *sine qua non* that steel works in the Central West possess their own raw materials, it may be useful to turn to that question first. It is stated as a fact that the National Steel Company have acquired the Oliver ore and coke interests and with them the Rosena Furnace property in the Shenango Valley. Henry W. Oliver and his associates control a sixth interest in the mining properties and leases on the Gogebic, Vermillion and Marquette and Menominee ranges, Lake Superior, the other five-sixths being held by the Carnegie Steel Company, Limited. This represents a very large tonnage.

The Ohio Steel Company are interested in the famous Mahoning mine, on the Mesaba range, one of the great open cast properties, which in 1898 produced 520,000 tons. The same parties also own an interest in the Biwabik mine, another open cut mine, which yielded 383,000 tons in 1898.

The parties connected with the Shenango Valley Steel Company have an interest in the Chapin mine, on the Menominee range, which is regarded as one of the greatest ore deposits on Lake Superior, having mined in 1898 725,000 tons of ore.

The Oliver coke interests are quite extensive. A part of the product, sufficient to supply the two furnaces of the Shenango Valley Steel Company, has been contracted for the period of eight years with that concern.

### Pig Iron Capacity.

Every one of the constituent companies possess their own blast furnaces, nearly every one of them modern in equipment. Their actual monthly output may be stated as follows:

Blast Furnace Capacity	Tons per month.
2 Shenango Valley Steel Company.....	19,000
2 Sharon Iron Company (Buhl).....	5,000
2 King, Gilbert & Warner.....	14,000
2 Bellaire Steel Company.....	18,000
3 Ætna-Standard Iron & Steel Company.....	13,000
3 Wheeling Iron & Steel Company.....	13,000
1 Oliver (Rosena).....	11,000
2 Ohio Steel Company (building).....	40,000
Total monthly output.....	133,000
Yearly capacity.....	1,600,000

This capacity, it will be observed, is not quite up to the output of the converters, but could probably be reached by remodeling some of the older stacks. The ore requirements foot up to about 2,600,000 tons.

### Other Products.

The product of a number of the plants has been crude Bessemer steel exclusively in the form of steel billets, tin plate bars and sheet bars. This is true of King, Gilbert & Warner and of the Ohio Steel Company, although the latter has been in shape to make steel rails at a small additional outlay. The Shenango Valley Steel Company formerly marketed a good deal of their steel with affiliated concerns, the New Castle Wire Nail Company and the New Castle and Shenango Tin Plate companies. The rod mill and nail plant were sold to the American Steel & Wire Company and the tin plate plants were acquired by the American Tin Plate Company.

The plants in the Wheeling district and the Buhl Steel Company, with the affiliated concern, the Sharon Iron Company, are makers of a considerable line of finished iron and steel products. Taking these up in their order we have:

THE ÆTNA-STANDARD IRON & STEEL COMPANY.—This company have a series of three works at Bridgeport, Ohio, and two plants at Mingo Junction. In the former

a large tonnage of sheets, galvanized plates, light rails, bands and the smaller sizes of shapes are made, the aggregate tonnage being now about 70,000 tons. At Mingo Junction there are two works, formed by the consolidation in 1879 of the Junction Iron Company and the Laughlin & Junction Steel Company. The former makes steel bars, with a tonnage of 40,000 tons annually, while the latter is a Bessemer plant which is now being remodeled completely.

**THE SHARON IRON COMPANY.**—This is a long established concern, allied to the Buhl Steel Company, who produce principally sheet iron and steel, but who also make bars, bands and hoops. The blast furnace department is supported by a battery of Semet-Solvay by-product coke ovens.

**THE WHEELING STEEL & IRON COMPANY.**—This concern, besides the Wheeling Steel Works at Benwood, own three rolling mills, being the old Belmont nail mill, with 152 cut nail machines; the Benwood Iron Works, with 130 cut nail machines and a train for making skelp, and the Top mill, with 130 cut nail machines and a sheet train.

It will be observed that these three mills all make sheets, two of them being large producers. Two concerns also make steel bars, and the Wheeling Company are one of the largest cut nail producers left in the trade.

**THE UNION IRON & STEEL COMPANY.**—This company control four large mills in the Mahoning Valley: the Girard works, making bars and light rails; the Warren plant, making bar and skelp iron and shafting; the Upper Youngstown mill, producing bars, hoops, shapes and cotton ties, and the Lower Mill, making a similar line. The total capacity is placed at 150,000 tons. The interests in the works are largely identical with those of the Ohio Steel Company.

#### **The Organization of the National Steel Company.**

We understand that, following the example of the American Tin Plate Company, the National Steel Company will have a charter as liberal in putting the power in the hands of the stockholders. It will not be run by an executive committee or a board of directors who have the authority to mortgage the property at will.

As yet it has not been fully determined what the capitalization of the new concern is to be, but it will be in the neighborhood of \$50,000,000, consisting of \$25,000,000 of 7 per cent. preferred stock and \$25,000,000 of common stock, with a treasury cash fund of \$7,000,000 to \$8,000,000. Some of the plants have bonds outstanding, the aggregate being about \$2,000,000. We understand that the stocks will not be placed through any banking house, but that the whole probable issue has been underwritten by parties connected with the properties and by persons and firms identified with the iron trade. In fact, the subscription rights are now commanding a handsome premium. The stock in the constituent companies will be converted into new stock through the agency of one trust company in New York and one company in Chicago, and the stocks of the National Steel Company will be listed on the Stock Exchange.

So far as the *personnel* of the new company is concerned, nothing final has yet been decided. It is reported, however, that William E. Reis of New Castle, Pa., will probably be president and Henry Wick of Youngstown will be vice-president.

One of the effects of this vast new consolidation has been to create a strong movement toward a

#### **Consolidation of Sheet Manufacturers.**

With the exception of the Apollo Iron & Steel Company, who possess a splendid open hearth steel plant and continuous sheet bar mill, the great majority of manufacturers of sheets rely upon the steel works for their supply of raw material in the form of bars. They must now face the fact that this raw material is under the complete control of the new consolidation. Conferences have taken place looking to a pooling of interests, possibly with the National Steel Company themselves, which

would thus absorb the whole of the sheet iron and steel trade of the Central West, as their affiliated concern, the American Tin Plate Company, now have complete sway of the tin plate industry.

#### **The Billet Situation.**

As matters now stand three interests in the Central West have between them an almost overwhelming influence in the billet market, and these are the Carnegie Steel Company, the Federal Steel Company and the new National Steel Company. Each of them or two of them have a great and in some branches a commanding influence in certain lines of finished steel. The Carnegie and the Federal companies are working together under a five-year agreement in the steel rail trade. All three count among one of their largest customers for billets or for rods, or both, the American Steel & Wire Company, who completely control the wire industry. All three together have nearly absolute sway so far as the raw material for sheets and tin plate is concerned, although some of the independent large works in the Pittsburgh district might surrender to the temptation to turn into that line. Two, the Carnegie and the Federal Steel companies, are very important factors in the plate trade.

As it is, three large lines of finished steel, rails, wire and tin plate are controlled almost completely by the four consolidations referred to. To this, it seems probable, the sheet industry will soon be added.

What is to be the fate of the great number of mills in the Central West, large and small, who roll plates, structural material, rail fastenings, bars or hoops, who make axles, forgings and the infinite variety of rolled and hammered forms? Some of them will depend upon their own open hearth plants. Others who produce specialties will possess that sense of security which a modest business gives. Many geographically well located for a concentration of plants will seek safety in consolidation.

As for the middleman, the merchant and the broker, the outlook is gloomy, indeed. Their opportunities are narrowing down rapidly.

### **✓ The Cast Iron Pipe Consolidation.**

The consolidation of a number of cast iron pipe foundries, to which we have repeatedly referred, has been completed, the title of the new company being the United States Cast Iron Pipe & Foundry Company. The concerns in the consolidation include all the large plants in the West and in the South and one leading foundry in the East. They are the following:

**Lake Shore Foundry, Cleveland, Ohio, 300 tons daily.**

**McNeal Pipe & Foundry Company, Burlington, N. J., 200 tons daily.**

**National Foundry & Pipe Works, Limited, Scottsdale, Pa., 300 tons.**

**Buffalo Cast Iron Pipe Company, Buffalo, N. Y., 150 tons.**

**Ohio Pipe Company, Columbus, Ohio, 175 tons.**

**Addyston Pipe & Steel Company, Addyston, Ohio, 350 tons, and Newport, Ky., 250 tons.**

**Dennis Long & Co., Louisville, Ky., 250 tons.**

**American Pipe & Foundry Company, Chattanooga, 150 tons; South Pittsburgh, 100 tons; Bessemer, 300 tons; Anniston, 350 tons, and Bridgeport, 160 tons daily capacity.**

In the aggregate the daily capacity of these plants is a little over 3000 tons. The principal concerns not in the consolidation are the Warren Foundry & Machine Company, with a capacity of 275 tons; R. D. Wood & Co., with 300 tons capacity; the Emaus plant, with 100 tons; the Utica works, with 80 tons; the Reading Foundry, with 140 tons, and J. B. Clow & Co., with 125 tons daily capacity. In the far West the Colorado Coal & Iron Company have a plant.

The authorized capital is \$15,000,000 of 7 per cent. non cumulative preferred stock and a like amount of common stock. Of this capital \$3,000,000 each of common and preferred are to be retained in the treasury. Of the eight component companies to be incorporated the new company will own the entire plants or all of the capital stock of the first seven. They will at first acquire a majority of the capital stock of the American Pipe & Foundry Company, and out of the preferred and common stock of the new company, reserved as above, there will be held sufficient for acquiring the remaining stock at the price to be



paid at the outset for the control. For the acquisition of any bonds of the American Pipe & Foundry Company not acquired by the new company for cash, at par and accrued interest, before they begin operations, an amount of the preferred stock of the new company, with a like amount of the common stock, reserved as aforesaid, shall be held to acquire entirely said bonds which may not be purchased at that time. To provide cash for the treasury of the new company and for the carrying out of the plan, Poor & Greenough are authorized to offer \$7,500,000 preferred stock for subscription at par with an equal amount of common stock.

The prospectus is accompanied by a statement signed by C. E. Burke, vice-president of the Lake Shore Foundry; A. N. McNeal and S. R. Lemoine of the McNeal Pipe & Foundry Company; A. C. Overholt, chairman of the National Foundry & Pipe Works, Limited; George B. Hayes, president of the Buffalo Cast Iron Pipe Company; E. C. Fuller of the Ohio Pipe Company, B. F. Noughton, treasurer of the Addington Pipe & Steel Company; George J. Long and A. F. Callahan of Dennis Long & Co., and F. C. Miller of the American Pipe & Foundry Company.

From this statement we quote the following:

"Having been long identified with this industry and familiar with the properties to be combined, we would say that the present annual output of cast iron pipe in the United States is 600,000 tons, of which there will be represented in this consolidation more than 450,000 tons per annum. We estimate that the net profits upon each ton of cast iron pipe manufactured and sold by the consolidated companies will be at least \$3 per ton. We believe a profit can be realized at \$4 per ton, but with a view of making an estimate that will be considered to be conservative by all interested, we have fixed the figure at \$3 per ton. You can safely assume the net profit which will be realized by the new company upon the output of pipe, even estimating on no increase in the business, to be not less than \$1,350,000 per annum. To this you may add not less than \$250,000 annual net profit to be realized in the manufacture and sale of special castings and general foundry and machine work, making a total net profit of \$1,600,000 per annum.

"The manufacture of cast iron pipe is one of the most important and stable of the iron industries of this country. Most of the gas works and water works, municipal and private, use cast iron pipe exclusively for their mains, and when durability is sought for cast iron pipe is preferred to any other material. Investors in the securities of water and gas companies prefer those of companies using cast iron pipe. As most of the cast iron pipe is purchased by municipalities, water, gas and railroad corporations, the element of risk in sales made is nearly eliminated.

"This consolidation should result in material savings, some of which are:

"In freights, resulting from ability to fill orders from foundries most favorably located.

"In the common use of all of the patents, trade secrets, experience and economic devices of the other foundries.

"Each foundry can run without interruption upon styles and sizes of pipe it is best fitted to produce.

"Reduction in general expenses of administration and sales from consolidation of executive and selling offices.

"A feature of the combination is the facility gained for export orders, for which several of the constituent foundries have the best possible locations and facilities. Large quantities of cast iron pipe are already exported, some of it into countries where it is already largely manufactured, and this foreign demand is rapidly increasing. The recent territorial acquisitions of the United States and the new fields open to our trade will afford large and growing markets for cast iron pipe. During recent years the use of cast iron pipe for railroad and roadway culverts has steadily increased, and the present demand for such uses is enormous."

## MANUFACTURING.

### Iron and Steel.

David Lamond, contracting engineer, Ferguson Building, Pittsburgh, Pa., has received a contract from the Low Moor Iron Company of Virginia for one C. H. Foote hot blast fire brick stove, 18 x 82 feet, to be erected at their blast furnace at Low Moor, Va.

The Alcania Tin Plate Company, who are erecting a tin plate plant at Avonmore, Pa., on the West Penn Railroad, have placed their contract for their buildings. The main or mill building will be of iron and steel, and 168 x 100 feet in size. The pickling house will be of wood and 50 x 50 feet. The tin and assorting house will be 124 x 50 feet, the boiler house 50 x 60 feet, and the bar shed 30 x 72 feet. Owing to arrangements made with the sheet bar mills by the leading tin plate interest, the Alcania Company have found it necessary to install a bar mill and will buy their slabs in the open market and break them down in bars on their own train. Samuel Discher of the Hamilton Building, Pittsburgh, is consulting engineer for the company, and work on their plant is being pushed as fast as possible.

The tin plate plant at Locust Point, Baltimore, Md., is being dismantled, and the workmen have been offered by the American Tin Plate Company free transportation to Europe or to certain points in the United States. Many have availed themselves of the offer, but very few have elected to return to Europe.

The West Duluth Furnace of the Duluth Iron & Steel Company, Duluth, Minn., is under option for lease and with it considerable more land for additional works. If the plant is taken it will be considerably enlarged.

The Diamond State Iron Company, Wilmington, Del., are said to have secured a contract for 600 tons of bar iron to go to the western coast of South America. This company have recently patented a new spike known as the Diamond, said to be meeting with much favor and for which they report large orders.

Employees of the Cambria Steel Company, Johnstown, Pa., were notified of a 10 per cent. advance in wages which went into effect on February 1. The advance is entirely voluntary on the part of the company.

The consolidation of the sheet bar mills, consisting of Ohio Steel Company, Youngstown, Ohio; Bellaire Steel Company, Bellaire, Ohio; Shenango Valley Steel Company, New Castle, Pa.; the Kling, Gilbert & Warner Company, Columbus, Ohio, and the Buhl Steel Company, Sharon, Pa., is expected to be completed within the next 30 days. The capitalization, while not fixed as yet, will probably be \$50,000,000, divided into preferred and common stock on the same lines as the American Tin Plate Company.

### Machinery.

The Pittsburgh Meter Company of East Pittsburgh have received an order from the city of Columbia, S. C., for meters sufficient to equip 1293 houses. The object of putting the meters in is to stop the waste of water.

Williams, White & Co., Moline, Ill., are so busy that they have recently been obliged to lose some orders on account of the necessary delay in filling them. They are now building one of their large No. 7 bulldozers with steam engine attached. This machine weighs about 25 tons. They are having quite a number of inquiries for this size of machine. They make it either with steam engine, electric motor or pulley, in all cases supplying their friction clutch with the machine. They have lately shipped to the Rock Island Arsenal a very heavy punching press.

The Albany Boiler Works, Albany, N. Y., have received an order for six 375 horse-power and two 250 horse-power boilers from South Africa. The boilers are so large in size that they will have to be shipped in sections and will be put together and completed at their destinations. This company very recently made a shipment of five carloads of tanks to Honolulu.

The Duncan Foundry & Machine Works, Alton, Ill., advise us that their trade in mining cars, shaker and revolving screens, &c., for 1898 was very satisfactory. They anticipate an increased business for this year.

The Frank-Kneeland Machine Company of Pittsburgh, builders of rolls and heavy rolling mill machinery of all kinds, are shipping this week a train load of about 20 cars of heavy machinery for the Lorain plant of the Federal Steel Company, at Lorain, Ohio. The blooming mill is 38 inches in size, and was shipped in six pieces, each piece taking a car to transport it. The housings each weigh 38 tons and the bed plates 38 tons each, making it much the heaviest blooming mill ever built. The Frank-Kneeland Machine Company have exceptional facilities for turning out work of this character, and their foundry and machine shops are equipped with modern tools for handling this class of work. This concern are very busy and are turning out more material than ever before in their history.

The Baker Brothers' Foundry & Machine Works, Toledo, Ohio, are making an addition to their foundry 110 feet long and 70 feet wide, besides additional cleaning rooms; also an addition 30 x 40 feet to their pattern shop. This makes their molding room 260 x 70 feet. The additions are of the same construction as present buildings, being entirely fire proof.

The Welmer Machine Works Company, Lebanon, Pa., are working to their full capacity in all departments, the work being pushed night and day. The firm have received an order for one of their 200 cubic feet capacity cinder cars for a furnace in England, and have just lately completed shipments of cars of the same capacity to furnaces in England. The company have also secured an order from the Stewart Iron Company, Limited, Sharon, Pa., for their Welmer blowing engine, having a 50-inch diameter steam cylinder, 96-inch diameter blowing cylinder, with a stroke of 60 inches, to be of the poppet valve type, fitted with their patent cut off governor; also an order from Laughlin & Co., Limited, Pittsburgh, Pa., for six 200 cubic feet capacity cinder cars, to be fitted with the Morrison-Slick lining.

The Union Railroad Company, Providence, R. I., have placed an order with the Filer & Stowell Company, Milwaukee, Wis., for a cross compound engine to be direct connected to generator, to be furnished by the General Electric Company, Schenectady, N. Y. The engine will have cylinders 28 x 54 x 48 inches and a fly wheel weighing 100,000 pounds. The Filer & Stowell Company have also received an order for a cross compound engine with 24 x 44 x 48 inch cylinders for power plant of the Edison Electric Light & Power Co., Erie, Pa.

## The Iron and Metal Trades.

The Iron trade is in a turmoil over the reports of further developments in the consolidation of Steel interests, and a moderate basis of fact has served as the foundation for a wonderful superstructure of fiction. The consolidation of the leading producers of Soft Steel outside of the Chicago and Pittsburgh districts has made such headway that the principal features of the new National Steel Company are pretty well settled. There is some uncertainty as yet about the Oliver Ore and Coke interests, which seems fundamental for the new enterprise. There can be little doubt that very comprehensive plans as to the control of the Steel trade are under consideration, but the probabilities are decidedly that the leading Pittsburgh interest will not be included in any consolidation. Even without any such accession to the ranks, the Steel trade of the Central West is now concentrated in very few hands, while some lines of finished products, like Steel Rails, Tin Plate and Wire, are under complete control. The Billet market is now restricted to companies who may be numbered on the fingers of one's hand.

The rush for material continues in all quarters, and prices are advancing, except in isolated cases, like in Hoops, in which a Standard Oil contract for about 3000 tons was taken at a very low figure.

Bessemer Pig and Gray Forge have advanced in the Central West to \$11 for the former and \$10.25 for the latter, under moderate sales. In the East Philadelphia notes a further advance of 25 cents on Foundry Irons.

The Billet market is strong, but is naturally much unsettled as to prices by the consolidation movement.

Steel Rails have been advanced to \$20 by the Chicago and Pittsburgh concerns, while the Eastern mills are now quoting \$20. There have been some sales, among them being one lot of 10,000 tons for Nova Scotia, under somewhat peculiar circumstances.

Additional tonnage is pressing on the Plate market, which is overloaded with work, East and West. Thus a Chicago consumer has been endeavoring to purchase a lot of 1000 tons from Eastern mills.

In the Wire trade further advances have been made, Nails and Wire being put up \$2 per ton and Barb Wire \$3 per ton. We understand that the leading company have recently taken some very large orders for export, among them a record breaker for South Africa.

The Tube and Pipe consolidation is reported to have met some obstacles, both in Pittsburgh and among the Eastern holders of one of the large plants.

The Cast Iron Pipe Company embrace the leading Southern and Western works, but only include one of the large Eastern mills.

In the Metal trade Copper has continued to soar, and is now close to the prices made in the times of the Secretan syndicate.

Tin has declined from its highest point.

Lead, after a further rise, has had a moderate reaction. Spelter is again advancing toward second figures.

## A Comparison of Prices

At date, one week, one month and one year previous.

**Advances Over the Previous Month in Heavy Type.**  
**Declines in Italics.**

	Feb. 8, 1899.	Feb. 1, 1899.	Jan. 11, 1899.	Feb. 9, 1898.
<b>PIG IRON:</b>				
Foundry Pig, No. 2, Standard, Philadelphia.....	\$12.00	\$11.75	\$11.50	\$10.75
Foundry Pig, No. 2, Southern, Cincinnati.....	11.75	10.75	.....	9.25
Foundry Pig, No. 2, Local, Chicago.....	12.00	11.50	11.00	10.75
Bessemer Pig, Pittsburgh.....	11.40	11.00	10.85	10.15
Gray Forge, Pittsburgh.....	10.75	10.00	9.65	8.90
Lake Superior Charcoal, Chicago.....	12.50	12.00	11.50	11.00
<b>BILLETS, RAILS, ETC.:</b>				
Steel Billets, Pittsburgh.....	17.25	17.25	16.50	15.00
Steel Billets, Philadelphia.....	19.50	19.25	18.90	17.30
Steel Billets, Chicago.....	18.50	18.50	18.25	17.50
Wire Rods, Pittsburgh.....	25.00	26.00	23.00	22.50
Steel Rails, Heavy, Eastern Mill.....	20.00	19.00	18.00	18.00
Spikes, Tidewater.....	1.50	1.50	1.40	1.50
Splice Bars, Tidewater.....	1.15	1.15	1.05	1.15
<b>OLD MATERIAL:</b>				
O. Steel Rails, Chicago.....	8.00	8.00	8.00	8.50
O. Steel Rails, Philadelphia.....	.....	11.50	11.25	10.50
O. Iron Rails, Chicago.....	14.00	13.75	12.75	12.25
O. Iron Rails, Philadelphia.....	.....	13.50	13.25	12.50
O. Car Wheels, Chicago.....	13.00	13.00	11.50	11.50
O. Car Wheels, Philadelphia.....	.....	10.75	10.50	9.75
Heavy Steel Scrap, Chicago.....	8.00	8.00	7.75	7.50
<b>FINISHED IRON AND STEEL:</b>				
Refined Iron Bars, Philadelphia.....	1.20	1.20	1.15	1.12½
Common Iron Bars, Youngstown.....	1.05	1.05	.....	0.95
Steel Bars, Tidewater.....	1.17½	1.17½	1.15	1.10
Steel Bars, Pittsburgh.....	1.10	1.05	.....	0.95
Tank Plates, Tidewater.....	1.50	1.45	1.35	1.10
Tank Plates, Pittsburgh.....	1.40	1.40	1.30	1.00
Beams, Tidewater.....	1.40	1.40	1.40	1.30
Beams, Pittsburgh.....	1.30	1.30	1.30	1.15
Angles, Tidewater.....	1.30	1.30	1.30	1.15
Angles, Pittsburgh.....	1.20	1.20	1.20	1.00
Skelp, Grooved Iron, Pittsburgh.....	1.20	1.20	1.07½	1.07½
Skelp, Sheared Iron, Pittsburgh.....	1.30	1.35	1.22½	1.12½
Sheets, No. 27, Chicago.....	2.20	2.00	2.00	2.10
Sheets, No. 27, Pittsburgh.....	1.90	1.95	1.85	1.95
Barb Wire, f.o.b. Pittsburgh.....	2.10	1.95	1.90	1.75
Wire Nails, f.o.b. Pittsburgh.....	1.60	1.40	1.45	1.45
Cut Nails, Mill.....	1.30	1.30	1.25	1.12½
<b>METALS:</b>				
Copper, New York.....	17.75	17.00	13.62½	11.00
Spelter, St. Louis.....	5.65	5.40	4.85	3.80
Lead, New York.....	4.57½	4.65	3.90	3.00
Lead, St. Louis.....	4.40	4.30	.....	3.60
Tin, New York.....	24.00	25.00	22.00	14.00
Antimony, Hallett, New York.....	9.75	9.00	8.75	7.25
Nickel, New York.....	38.00	38.00	38.00	33.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York.....	3.44	3.44	2.15	3.05

## Chicago. (By Telegraph)

Office of The Iron Age, 805 Fisher Building, {  
CHICAGO, February 8, 1899. }

Another week of advancing prices is to be added to the record of better times. Two advances of \$1 each have been made on Steel Rails. The condition of the Plate trade gets steadily worse. Almost any price is to be had for Plates for prompt shipment. Bars are much stronger and Sheets are advancing. A comparison of Iron and Steel prices ruling in the spring of 1896 shows that values even now are not up to what they were at that time, although they were then considered low. Metals have made further progress upward.

**Pig Iron.**—The volume of business was not as large as during the preceding weeks. Sales have been made of both local and Southern Iron, and large inquiries are in the market, but the actual business has been confined to small figures. This is partly because few producers have any Iron to offer and partly because prices are now so high that buyers are disposed to carefully consider whether they can afford to pay what sellers ask. Here and there it happens that a consumer is caught short and must pay a good premium for quick delivery. Most consumers, however, are pretty well supplied and consequently the demand is not so general as in December and January. The course of prices is exactly as reported last week. Every sale is being made on an independent basis. An advance has been established, however, of at least 50c. on local and Charcoal Iron and 75c. to \$1 on Southern Iron. We quote for cash as follows:

Lake Superior Charcoal.....	\$12.50 to \$13.50
Local Coke Foundry, No. 1.....	12.50 to 13.00
Local Coke Foundry, No. 2.....	12.00 to 12.50
Local Coke Foundry, No. 3.....	11.50 to 12.00
Local Scotch, No. 1.....	12.50 to 13.00
Ohio Strong Softeners, No. 1.....	12.50 to 13.75
Southern Silvery.....	to .....
Southern Coke, No. 1.....	to 13.00
Southern Coke, No. 2.....	to 12.75
Southern Coke, No. 3.....	to 12.50
Southern Coke, No. 1 Soft.....	to 13.00
Southern Coke, No. 2 Soft.....	to 12.75
Foundry Forge.....	to .....
Gray Forge and Mottled.....	to .....
Southern Charcoal Softeners.....	to 12.50
Alabama and Georgia Car Wheel.....	15.50 to 17.00
Malleable Bessemer.....	12.00 to 13.00
Standard Bessemer.....	12.50 to 13.00



Spiegel, 20 per cent. .... to 30.00  
 Jackson County Silvery, according to Sil-  
 con..... 13.00 to 14.50

**Bars.**—The market continues active in both Iron and Steel Bars. Sales are increasing, and more transactions would probably be recorded if the mills were not getting so high in their prices as to cause buyers to hesitate and carefully consider their requirements, the buying movement, however, in general covering all classes of consumers as well as jobbers. Mill shipments of Common Iron or Soft Steel Bars are quoted at 1.15c. to 1.20c. Chicago, with an occasional mill asking as high as 1.25c. Jobbers are having a very good business, asking 1.30c. full extras, for Bar Iron; 1.25c. to 1.30c. half extras, for Steel Bars, and 3.10c. for Norway and Swedish.

**Car Material.**—Further orders for cars have been placed amounting to several thousand and hence additional orders are in market for material.

**Structural Material.**—The week has not been of heavy business. Some small contracts were placed, but nothing noticeable. A great deal of work, however, is in sight and will shortly be placed. Mill shipments are quoted as follows, Chicago delivery: Beams and Channels, up to 15 inches, 1.45c. to 1.50c.; 18 to 24 inches, 1.55c. to 1.60c.; Angles, 1.35c. to 1.40c.; Universal Plates, 1.40c. to 1.45c.; Tees, 1.50c. to 1.60c. Small lots from store are selling at 1.80c. to 1.90c. for Beams and Channels, 15 inches and less; 1.45c. to 1.50c. for Angles, and 1.60c. to 1.65c. for Tees.

**Plates.**—The market is almost in a state of congestion. The mills are apparently unable to make anything like early delivery and some consumers are almost frantic in their efforts to secure needed material. Jobbers have such a good demand from stock that they have advanced their prices on small lots of Tank Steel to 1.70c. and Flange 2c. Mill shipments for such deliveries as can be made are quoted as follows, Chicago delivery: Tank Steel, 1.45c.; Flange, 1.30c.; Marine, 1.70c.; Common Fire Box, 1.90c.; Best Fire Box, 3c. to 4c.

**Merchant Pipe.**—Sales agents are only making quotations subject to immediate acceptance with specifications. Orders continue to come in surprisingly well. Mill shipments are as follows: Butt Weld Black, 55 per cent.; Lap Weld Black, 65 per cent.; Butt Weld Galvanized, 45 per cent.; Lap Weld Galvanized, 50 per cent., with an additional five 10's and 7½ per cent. off. Merchant Boiler Tubes are quoted at 65 and 5 per cent. off on 2 to 2½ inch, and 70 and 5 per cent. off on 2¾-inch and larger.

**Sheets.**—The Sheet trade is in good condition, with an active demand, as is always the case with a rising market. Mill shipments of No. 27 Black Sheets are quoted at 2.20c., Chicago, and Galvanized at 75 and 10 and 7½ to 80 per cent. off, at mill. Small lots of No. 27 Black are delivered by jobbers at 2.40c., and Galvanized at 75 and 10 per cent. off.

**Merchant Steel.**—Orders were placed during the week at the advanced prices, which do not seem to have checked business. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.60c. to 1.65c.; Smooth Finished Tire, 1.50c. to 1.55c.; Open Hearth Spring Steel, 1.75c. to 1.80c., base; Sleigh Shoe, 1.35c.; Toe Calk, 1.70c., base; Ordinary Tool Steel, 5.50c. to 7c.; Specials, 10c. and upward.

**Billets and Rods.**—Buyers are endeavoring to place orders for Open Hearth Billets and offer \$22, but none are to be obtained here. Ordinarily Billets are nominally quoted at \$18.50 and Wire Rods \$26, but the local mills are still unable to take any additional business.

**Rails and Track Supplies.**—Two advances of \$1 each were made in the price of Heavy Sections of Steel Rails during the week. They are now quoted at \$22. Plenty of business is being offered on which the local mills are unable to make delivery. Nevertheless, quite a considerable tonnage was booked last week for deliveries in September and later. The demand for Light Rails continues very good, with prices at \$20 and upward, according to weight, &c. Track Supplies are quoted as follows: Splice Bars, 1.10c.; Spikes, 1.55c. to 1.60c.; Track Bolts, with Hexagon Nuts, 1.90c. to 2c.; Square Nuts, 1.80c. to 1.90c.; Steel Links and Pins, 1.45c. to 1.50c.; Iron Links and Pins, 1.45c. to 1.50c.

**Old Material.**—The general demand for Scrap has been less strong and trade has been somewhat irregular. The late activity appears to have been principally among the dealers, although some consumers were in the market. Sales of several lots of Old Iron Rails have been made at rates equivalent to \$14. Chicago. The demand has been somewhat better for Steel Scrap. The supply of Cast Scrap continues restricted. Dealers' selling quotations are nominally as follows, per gross ton: Old Iron Rails, \$14; Old Steel Rails, mixed lengths, \$8 to \$8.50;

selected long lengths, \$10 to \$11; Relaying Rails, \$14 to \$15; Old Car Wheels, \$13 to \$13.25; Heavy Melting Steel Scrap, \$8 to \$8.25; Mixed Steel, \$7 to \$7.25. The following selling prices are per net ton: No. 1 Railroad Wrought, \$12 to \$12.50; Dealers' Forge, \$10.25 to \$10.50; Fish Plates, \$13 to \$13.50; No. 1 Mill, \$7.75 to \$8; Heavy Cast, \$8.75 to \$9; Stove Plates, \$6; Iron Car Axles, \$14.50 to \$14.75; Horseshoes, \$10 to \$10.50; Cast Borings, \$4.25; Steel Axle Turnings, \$6.75; Iron Axle Turnings, \$7.25; Machine Shop Turnings, \$6 to \$6.25.

**Metals.**—Copper has again advanced and carload lots of Lake are now quoted at 18½c. and Western at 18c. The shortage of Scrap Copper is causing a decided increase in the use of Ingot Copper by many of the brass founders. Spelter is firm at 5.65c. to 5.70c. Pig Lead has not been in great demand locally, but is firmly held at 4.40c. to 4.50c.

**Tin Plate.**—A very good demand is noted by both manufacturers and jobbers. The price of jobbing lots of 100 lb. Cokes is now \$4.05. The English manufacturers have advanced the price of Vat Tins, which are now made here, 2 shillings per cwt., which is equal to about ½c. per lb.

## St. Louis. (By Telegraph.)

Office of The Iron Age, 512 Commercial Building, {  
 ST. LOUIS, February 8, 1899. }

**Pig Iron.**—No particularly new developments are noted this week. While there is not so much anxiety shown by consumers, yet there is a steady demand for Foundry Iron of high grade. A local interest succeeded in placing an order now considered large, but which several months since would have been looked on as very ordinary. The general run of successful purchases are not rated by the hundred tons. Even those small amounts must be submitted to furnaces for approval. Higher freight rates have now come into effect. While the prices below quoted show an increase over last week, it is not unlikely that a further premium will be asked by furnaces. We quote nominally for cash, on cars St. Louis:

Southern, No. 1 Foundry.....	to \$12.75
Southern, No. 2 Foundry.....	to 12.25
Southern, No. 3 Foundry.....	to 12.00
No. 1 Soft.....	to 12.75
No. 2 Soft .....	to 12.25
Gray Forge.....	to 11.75
Mottled.....	to 11.25

**Bar Iron.**—The car works of St. Louis are continuing their purchases of Bar Iron and the trade in general is encouraging. Wants are being constantly developed by the Iron using trade and are naturally stimulated by the general firm tone of markets. The independence of mills is still noted and quotations are for prompt acceptance as a general thing. Mills quote 1.15c. for carload lots, half extras, and jobbers quote 1.25c. for carloads. Small lots from stock are quoted at 1.35c.

**Rails and Track Supplies.**—Specifications are constantly being presented to mills and the general tone of inquiries indicates considerable new work and betterments. The prevailing cold weather has prevented immediate use of much Track Material now on hand, but the delay is only conditioned on the weather. Quotations noted for Supplies are as follows: Splice Bars, 1.15c. to 1.25c.; Track Bolts, with Square Nuts, 1.90c.; with Hexagon Nuts, 2c.; Iron Links and Pins, 1.55c.; Steel, 1.55c.; Spikes, 1.60c.

**Sheets.**—There is no appreciable let up in demand and orders for Sheets. The extent of the business is rather governed by the mills' wishes. Some good sized orders have been placed, it is true, but the general market is expressed by the smallness of quantities booked. Prices are stiffening up as makers find themselves close up to production. No. 27 Common Black Sheets are quoted at 2.15c., St. Louis. Galvanized Sheets are subject to a lower discount and may be quoted at a discount of 80 per cent. off list.

**Pig Lead.**—Sales of 50 tons of Desilverized Pig Lead were noted to-day at 4.42½c. A lot of Soft Missouri brought 4.40c. This is a few cents under the price which obtained here within the past few days but is not to be taken as an appreciable weakening. Refiners have not much to offer and the general indications point to still higher figures.

**Spelter.**—The increasing price of Spelter abroad keeps the local market at a high point. Smelters have had to pay a top price of \$38.50 for Zinc Ore. There is little offered for sale and prices may be said to be 5.65c. to 5.70c.

A project is under consideration to build a large slag cement factory in connection with the Ensley furnaces of the Tennessee Coal, Iron & Railroad Company, at Ensley, Ala.

## Pittsburgh.

Office of *The Iron Age*, Hamilton Building,  
PITTSBURGH, February 8, 1899.

(By Telegraph.)

**Pig Iron.**—At a meeting of the Executive Committee of the Valley furnaces, held in Youngstown on Monday, February 6, it was decided to withdraw the price of \$10.50, Valley, for Bessemer Pig. No regular price was established, but it is not believed that Bessemer Iron for delivery in the next three or four months could be bought under \$11, Valley furnace. Just at present there is a surplus of Bessemer Pig for prompt shipment, due to the fact that the yards of the Ohio Steel Company are piled full of Pig and they are declining to take any more until the situation is relieved. To offset this condition one or two of the Valley furnaces will go on Mill Iron, a couple on Foundry Iron, while Struthers is on Basic Pig and Grace of Brier Hill is on Low Phosphorus. Valley furnaces are holding Gray Forge firm at \$10.25, at furnace. In the Pittsburgh district there is practically no Iron to be bought, and both Bessemer and Gray Forge have been brought into Pittsburgh from the Valleys, the former on the basis of \$10.75, Valley, or \$11.40, Pittsburgh, while Gray Forge has been sold at \$11, Pittsburgh, equal to \$10.55, Valley furnace. The regular freight of 65c. on Pig from the Valleys to Pittsburgh is being firmly held and no concessions can be had from the railroads. We quote Bessemer at \$10.75 to \$11, Valley furnace, the lower price being for prompt Iron, and Gray Forge at \$10.25, Valley furnace; No. 1 Foundry, \$11.25 to \$11.50; No. 2 Foundry, \$10.75 to \$11; Gray Forge, \$10.75 to \$10.85; Bessemer, \$11.40 to \$11.50, all f.o.b. Pittsburgh district. We note a sale of 1000 tons of Bessemer at \$11.40, Pittsburgh, and 600 tons of Gray Forge at \$11, Pittsburgh, for prompt shipment.

**Billets.**—There is a scarcity of Billets for prompt shipment and very much higher prices are being offered by buyers for Steel for prompt delivery. Firm offers of \$17.75, delivered in Pittsburgh district, have been made. We quote Billets at \$17.25 to \$17.50, maker's mill, depending on delivery.

**Sheet Bars.**—The Sheet Bar deal under way for some time, and repeatedly referred to in this report, has gone through, and Bessemer Steel plants and Sheet Bar mills of Aetna-Standard, Shenango Valley, Ohio Steel Company, Bellaire, Buhl Steel and King, Gilbert & Warner have been taken over by the National Steel Company, with W. E. Reis, president, who was formerly president of the Shenango Valley Steel Company. In this condition of the market we omit quoting on Sheet Bars until the situation is cleared.

(By Mail.)

The tendency of prices on Iron and Steel is still upward, and since our last report Bessemer Pig is fully 50c. a ton higher, the Valley furnaces having withdrawn the price of \$10.50, furnace, and now quote at \$11 for Iron for delivery up to July only. Wire and Wire Nails have been advanced \$2 a ton, while Plates are fully that much higher, a leading Pittsburgh mill having sold at 1.50c., their mill, for April delivery. The higher prices on Black and Galvanized Sheets, Iron and Steel Bars, Boiler Tubes, Oil Country Goods and Skelp, referred to last week, are being held, and still higher prices on all these products are practically certain. A leading Sheet maker in this city has stated that No. 28 will go to 2½c. before July. The whole market is feverish, and it is hard to tell just how high prices may go. A movement may start at any time that would carry values up \$4 or \$5 a ton on nearly everything. A scarcity of material of all kinds exists, and deliveries in present quarter are practically unobtainable. The deal by which the Bessemer Steel plants and Sheet Bar mills of the Shenango Valley Steel Company, New Castle, Pa., the Ohio Steel Company, Youngstown, Ohio, the Buhl Steel Company, Sharon, Pa., Aetna-Standard Iron & Steel Company, Bridgeport, Ohio, the Bellaire Steel Company, Bellaire, Ohio, and the King, Gilbert & Warner Company, Columbus, Ohio, are to be taken over into one combination has practically been concluded. The name proposed for the new concern is the National Steel Company, and it will be capitalized at either \$50,000,000 or \$60,000,000.

While the options on the stock of these concerns have not been secured in the name of the American Tin Plate Company, yet it is thoroughly understood in the trade that the American Tin Plate Company are at the back of the new enterprise and have secured control of these plants to protect themselves on Sheet Bars and take them out of the market as buyers. It is also understood that progress is being made on the movement to take over the Sheet mills into one corporation, notwithstanding reported denials of John Jarrett. The deal to take over the Pipe mills into the National Tube Company has met with an unexpected obstruction, but it is thought this can be bridged over and the deal put through.

**Ferromanganese.**—We continue to quote domestic Ferro at \$50 in large lots, delivered at buyer's mill. The price quoted for carload lots, or less, is \$52.50, delivered. Spiegel is quoted at \$23 to \$23.50, delivered at buyer's mill.

**Plates.**—The leading local mill are reported to be out of the market as sellers of Plates for delivery before July. They have a tremendous tonnage on their books that will take practically all they can turn out in the next four or five months, and the new Plate mills being built will not be available before that time. Another local mill have advanced prices on rectangular Plates to 1.50c., and sales of round lots have been made at that figure. In fact there is not a Plate mill in the Pittsburgh district that is promising anything this side of April, and the engagements of some of them extend beyond that month. We quote Sheared Plates at 1.40c. to 1.50c.; Flange, 1.50c. to 1.55c.; Marine, 1.60c. to 1.65c.; Ordinary Fire Box, 2c.; Locomotive Fire Box, 2.75c. It should be noted that for deliveries on Sheared Plates within the next 60 days the price is practically 1.50c. at mill.

**Sheets.**—The demand for Black Sheets is heavier than the mills can take care of and as a result there is a scarcity of Black Sheets for early shipment. Buyers are rushing in orders and specifications and have simply deluged the mills with tonnage, and there is no difficulty in entering orders at to-day's prices. Some of the leading mills feel they have all the tonnage on their books they care to have, and are turning down inquiries. We quote Black Sheets, Box Annealed, one pass through cold rolls, at 1.90c. to 2c. for No. 27; 2c. to 2.05c. for No. 28. We are advised that our lower quotations are minimum, and are being obtained for good sized lots. Prices on Galvanized Sheets continue very firm, and the minimum of the market is 80 off in large lots, freight allowance not to exceed 15 cents. For small orders, 75, 10 and 5 per cent. at mill is quoted.

**Spelter.**—The market has been practically stationary since our last report. Prime Western grades are offered in this market at 5.70c., delivered f.o.b. cars, Pittsburgh district.

**Structural Material.**—There is an active business, chiefly in small lots, but which aggregates a heavy tonnage. There is a good deal of foreign inquiry, and some good sized orders for Beams and Channels and other Shapes have been booked by the leading local mill, and regular shipments abroad are being made right along. Prices are very firm, and we quote Beams and Channels, 15-inch and under, 1.30c.; 18, 20 and 24 inch, 1.40c.; Zees, 1.30c.; Tees, 1.35c.; Angles, 1.20c., all f.o.b. Pittsburgh.

**Rods.**—It is understood that it will be the policy of the American Steel & Wire Company, who are now in complete control of the Rod market, to freely supply regular customers with Rods, so that there need not be felt any apprehension on that score. Prices will depend largely on the condition of the raw material market. At this time there are practically no surplus Rods to be had, and the American Steel & Wire Company started up on Monday morning, February 6, their Beaver Falls mills on Rods to help them out. In this condition of the market it is practically impossible to quote, but prices ranging all the way from \$25 to \$26 are talked of.

**Bars.**—With Billets very close to the \$18 mark, it is not surprising to find makers of Steel Bars very firm in their views as to prices, and the general market for Steel Bars may be quoted at 1.10c., maker's mill. The tonnage is heavy and buyers are placing much larger orders than usual, showing that consumption is largely increased. Still higher prices for Steel Bars in the near future are probable. In Iron Bars the situation is practically the same. The Valley mills are full of tonnage and very firm in their ideas as to prices. Car builders and other large consumers of Iron Bars are placing liberal orders, and for much larger quantities than usual. We continue to quote Iron Bars at 1.05c. to 1.10c., at mill, but it should be noted that our lower price is for exceptionally attractive orders only, the general market being represented by the quotation of 1.10c., at mill.



**Merchant Steel.**—A good demand is reported and prices are very firm, the recent advance on certain kinds of material being firmly held. Shipments by the mills are very heavy, and some makers are considerably behind in deliveries. We quote: Tire Steel, 3-16 to  $\frac{3}{4}$  inch and heavier, 1.20c. to 1.25c.; Toe Calk, 1.30c. to 1.35c.; Flow Slabs, 3-16-inch and lighter, 1.30c. to 1.35c.; Spring Steel, 1.30c. to 1.40c., depending on quality; Machinery Steel, 1.30c. to 1.35c.; Cutter Shoes, 2.15c. to 2.25c.; Rolled Lay Steel,  $2\frac{1}{2}$ c.; Hammered Lay Steel,  $2\frac{3}{4}$ c.; Cant Hook Steel, Open Hearth,  $2\frac{1}{2}$ c.; Crucible, 3c.; Tool Steel, ordinary grades,  $4\frac{3}{4}$ c. to 6c.; extra grades, 9c. and upward, all 60 days or 2 per cent. off for cash.

**Skelp.**—There is nothing of interest to report this week. The Skelp mills all have considerable tonnage on their books and prices are very firm. We quote: Grooved Steel Skelp, 1.07 $\frac{1}{2}$ c. to 1.10c., most sellers holding firm for the higher price; Sheared Steel Skelp, 1.20c. to 1.30c., depending on delivery; Grooved Iron Skelp, 1.20c. to 1.25c.; Sheared Iron Skelp, 1.30c. to 1.40c., the price depending largely on deliveries wanted. Basic Steel Skelp, ordinary quality, 1.30c. to 1.35c.; Best Quality, 1.40c. to 1.45c., all 60 days, or 2 per cent. off for cash, f.o.b. cars in Pittsburgh district.

**Pipes and Tubes.**—An unexpected obstacle has been met in the movement to take over the Pipe mills into one company, to be known as the National Tube Company. It is reported that two officials of a leading concern are opposed to the consolidation. It is thought, however, their objections will be overcome and the deal put through, although some changes may be made in the plan as originally proposed. The Pipe market continues extremely active, one leading seller being practically out of the market, having nothing to spare for the next 60 days. Another leading local mill are reported to have orders on their books for between 6,000,000 and 7,000,000 feet of small Pipe. Never before in the history of the Pipe trade has there been as much activity as there is at the present time. Prices continue extremely firm, and we quote Merchant Pipe as follows: Butt Black, 55 per cent.; Lap Black, 65 per cent.; Butt Galvanized, 45 per cent.; Lap Galvanized, 50 per cent. Additional discounts are five 10's and 7 $\frac{1}{2}$  per cent. for small lots, and five 10's and 7 $\frac{1}{2}$  and 5 per cent. on carloads. The demand for Oil Country goods is abnormally heavy, and the recent advance in prices made by the manufacturers is being firmly held. Deliveries of material are hard to get, all the mills being behind on their orders. We quote Screw and Socket Joint Casing at 57 $\frac{1}{2}$  and 10 per cent.; Inserted Joint Casing, 57 per cent., with an additional 5 per cent. to dealers. There is a good demand for Boiler Tubes and prices are very firm. We quote:  $1\frac{1}{4}$  and  $1\frac{1}{2}$ -inch Iron, 60 per cent. discount; Steel, 60 per cent.;  $1\frac{3}{4}$ -inch to  $2\frac{1}{2}$ -inch, inclusive, Iron, 65 per cent.; Steel, 70 per cent.;  $2\frac{3}{4}$ -inch and larger, Iron, 70 per cent.; Steel, 72 $\frac{1}{2}$  per cent., with 5 per cent. additional to dealers.

**Connellsville Coke.**—The Coke trade is feeling the effects in a very marked degree of the activity in the Iron trade, and the demand for Furnace and Foundry Coke at the present time is enormous. Production in the Connellsville region is the highest ever known and last week exceeded 165,000 tons. It is likely additional ovens will have to be fired up to meet the increasing demand. Prices are very firm, and we quote strictly Connellsville Furnace Coke at \$1.60, and Foundry Coke at \$1.90 to \$2.30, depending upon destination, all in tons of 2000 pounds, f.o.b. cars at oven. As before noted, some brands of Furnace and Foundry Coke, not regarded as strictly Connellsville, are being offered at lower prices than quoted above.

### Cincinnati. (By Telegraph.)

Office of The Iron Age, Fifth and Main streets, {  
CINCINNATI, February 8, 1899. }

The general situation is unchanged, and the Pig Iron market continues exceedingly strong, with an upward tendency which seems to defy all efforts to keep it in check. There is beyond doubt a shortage in the supply available for satisfying the wants of present inquirers. Furnaces consider they have done well when they dismiss a customer with a fraction of what he asks for, and in many cases it has to be a favored customer who walks off with the fraction. There is a good stiff inquiry for Iron for second quarter delivery beyond June. However, few buyers or sellers seem to care to talk about Southern Pig, which is just now the highest in the market, and yet in recent contracts made in Indianapolis it divided the amounts sold with Ohio Irons, the reason being partly the inability of the Ohio furnaces to care for the entire amounts. It is also noted that Virginia Iron has been selling throughout Indiana recently, which territory under ordinary conditions is outside of the influence of Virginia furnaces. Northern Irons show a

material advance in price, as well as Southern brands, and there is every evidence that furnaces both North and South are sold nearly to the point of congestion. Sellers are continually sounding the alarm in regard to the tendency to advance prices, and there seems good ground for believing that further advance at this time will be productive of no lasting good. Revised quotations f.o.b. Cincinnati, are as follows:

Southern Coke, No. 1.....	\$12.25 to \$12.50
Southern Coke, No. 2.....	11.75 to 12.25
Southern Coke, No. 3.....	11.25 to 11.50
Southern Coke, No. 1 Soft.....	12.25 to 12.50
Southern Coke, No. 2 Soft.....	11.75 to 12.25
Southern Coke, Gray Forge.....	10.50 to 10.75
Southern Coke, Mottled.....	10.50 to 10.75
Ohio Silvery, No. 1.....	12.75 to 13.25
Ohio Silvery, No. 2.....	12.25 to 12.75
Lake Superior Coke, No. 1.....	12.00 to 12.25
Lake Superior Coke, No. 2.....	11.75 to 12.00

#### Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$14.75 to \$15.00
Lake Superior Car Wheel and Malleable..	14.25 to 14.75

**Plates and Bars.**—No change in the market. Business is good and prices strongly maintained. Quotations are unchanged and strongly held. We quote, f.o.b. Cincinnati: Bars, wholesale, 1.20c. to 1.25c., with half extras; Bars, retail, 1.35c. to 1.50c., with full extras; Plates, wholesale, 1.45c. to 1.55c.; Bar Angles, 1.25c. to 1.40c.; Sheets, No. 27, 2.10c.; Sheets, No. 10, 1.70c.

**Old Material.**—The market has been more active, and the outlook is quite fair, with advancing values. We quote, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, \$10.75 to \$11; Cast Scrap, \$8.25 to \$8.75; Car Wheels, \$10.25 to \$10.75; Iron Axles, \$14.50 to \$15; Iron Rails, \$12.50 to \$13; Steel Rails, \$8.75.

### New York.

Office of The Iron Age, 22-23 William street, {  
NEW YORK, February 8, 1899. }

**Pig Iron.**—The local market continues quite active, a considerable number of transactions having been closed during the week. We understand also that there have been some sales of warrants, blocks aggregating 3000 tons having been marketed. We quote, at tidewater: No. 1 X Foundry, \$12 to \$12.25; No. 2 X, \$11.50 to \$11.75; No. 2 Soft, \$11.25; No. 2 Plain, \$11; No. 3 Foundry, \$10.75, and Gray Forge, \$10.50. Southern brands, tide-water delivery, are nominally: No. 1, \$12 to \$12.50; No. 2, \$11.75 to \$12.25; No. 1 Soft, \$11.75 to \$12; No. 2, \$11.25 to \$11.50; Gray Forge, \$10.50 to \$10.75; Basic, \$10.75 to \$11.

**Steel Rails.**—Sales by Eastern Rail makers aggregate about 20,000 tons during the week, of which one lot of 10,000 tons is for delivery in Nova Scotia. The market has grown in strength, and makers now quote \$20 for Standard Sections.

**Track Fastenings.**—We quote: Angle Bars, 1.15c. to 1.20c.; Spikes, 1.50c. to 1.55c., and Bolts and Nuts, 1.75c. to 1.80c.

**Finished Iron and Steel.**—Business continues very active, and the market is exceedingly strong. We quote as follows: Beams, 1.40c. to 1.50c.; Angles, 1.30c. to 1.35c.; Universal Mill Plates, 1.40c.; Tees, 1.45c. to 1.50c.; Channels, 1.35c. to 1.45c.; Steel Plates are 1.40c. to 1.45c. for Tank, 1.45c. to 1.50c. for Shell, 1.50c. to 1.55c. for Flange, 1.75c. for Fire Box, and 2.25c. to 2.50c. for Locomotive Fire Box, on dock. Charcoal Plates are 2.25c. for Shell, 2.75c. for Flange, and  $\frac{1}{2}$ c. advance for Fire Box quality. Refined Bars are 1.20c. to 1.25c., and Common Bars are 1.12 $\frac{1}{2}$ c. to 1.15c., on dock. Soft Steel Bars, 1.15c. to 1.20c.; Steel Axles, 1.40c. to 1.50c.; Scrap Axles, 1.50c. to 1.70c.; Links and Pins, 1.50c. to 1.60c.; Hoops, 1.17 $\frac{1}{2}$ c. to 1.20c.; Best Iron Boiler Rivets, 2.25c. to 2.50c., delivered; Steel Structural Rivets, 1.75c. to 1.85c.; Cotton Ties, 55c. to 65c. per bundle at mill.

(By Telegraph.)

PHILADELPHIA, PA., February 8, 1899.—The market for pig iron is extremely strong, and averages at least 25 cents dearer than last week. Deliveries are called for with much urgency, and are responded to with great difficulty. Liberal amount of sales at the advance mentioned includes all grades of billets, which are scarce, and in some cases are quoted close to \$20, although an outside lot or two of odd sizes could be done at probably close to \$19. Finished material of all kinds is scarce, strong and hard to get for quick delivery. Plates advanced \$1 per ton, with a very heavy demand; large sales of heavy steel scrap at \$11.75, delivered.

The Chicago office of Henry R. Worthington has been removed from 185 Van Buren street to The Rookery Building.

## QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING FEBRUARY 8, 1899.

	Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.
Am. S. & W., Common.....	98,070	49 -50 $\frac{1}{2}$	47 -49 $\frac{1}{2}$	49 -49 $\frac{1}{2}$	46 $\frac{1}{2}$ -49	47 $\frac{1}{2}$ -49 $\frac{1}{2}$	45 -48
Am. S. & W., Pref.....	22,710	96 -97	94 $\frac{1}{2}$ -96 $\frac{1}{2}$	96 $\frac{1}{2}$ -96 $\frac{1}{2}$	95 -94 $\frac{1}{2}$	94 $\frac{1}{2}$ -95 $\frac{1}{2}$	92 $\frac{1}{2}$ -95
Col. Fuel and Iron.....	5,625	34 $\frac{1}{2}$ -35	33 $\frac{1}{2}$ -34	.....	33 $\frac{1}{2}$ -34	31 $\frac{1}{2}$ -34	30 $\frac{1}{2}$ -32 $\frac{1}{2}$
Federal Steel, Common.....	194,100	52 -53 $\frac{1}{2}$	49 $\frac{1}{2}$ -52	50 $\frac{1}{2}$ -52 $\frac{1}{2}$	49 -50 $\frac{1}{2}$	48 -51	46 $\frac{1}{2}$ -48 $\frac{1}{2}$
Federal Steel, Prefer.....	75,186	87 -88 $\frac{1}{2}$	85 $\frac{1}{2}$ -87 $\frac{1}{2}$	87 -87 $\frac{1}{2}$	85 $\frac{1}{2}$ -87	85 $\frac{1}{2}$ -87 $\frac{1}{2}$	84 -85 $\frac{1}{2}$
Tennessee Coal and Iron.....	77,720	44 $\frac{1}{2}$ -45 $\frac{1}{2}$	40 $\frac{1}{2}$ -44 $\frac{1}{2}$	43 -44 $\frac{1}{2}$	41 $\frac{1}{2}$ -42 $\frac{1}{2}$	40 $\frac{1}{2}$ -43 $\frac{1}{2}$	38 $\frac{1}{2}$ -42
Cambria Iron, Phila*.....	578	45 $\frac{1}{2}$ -45 $\frac{1}{2}$	45 $\frac{1}{2}$ -45 $\frac{1}{2}$	-45 $\frac{1}{2}$	45 -45 $\frac{1}{2}$	45 $\frac{1}{2}$ -45 $\frac{1}{2}$	45 $\frac{1}{2}$ -45 $\frac{1}{2}$
Cambria, Scrip***.....	.....	.....	.....	.....	.....	.....	.....
Cambria, Steel***.....	20,170	16 $\frac{1}{2}$ -16 $\frac{1}{2}$	16 $\frac{1}{2}$ -16 $\frac{1}{2}$	16 $\frac{1}{2}$ -16 $\frac{1}{2}$	16 $\frac{1}{2}$ -16 $\frac{1}{2}$	16 $\frac{1}{2}$ -16 $\frac{1}{2}$	15 $\frac{1}{2}$ -16 $\frac{1}{2}$
Penna. Common, Phila.....	315	.....	-26	.....	26 $\frac{1}{2}$ -27	26 $\frac{1}{2}$ -27	-26 $\frac{1}{2}$
Penna. Prefer., Phila.....	100	-49	.....	.....	49 -50	.....	.....
Tin Plate Com., Chic.....	21,690	40 $\frac{1}{2}$ -43 $\frac{1}{2}$	42 -43 $\frac{1}{2}$	41-42	40 $\frac{1}{2}$ -42	41 -42 $\frac{1}{2}$	41 -41 $\frac{1}{2}$
Tin Plate Prefer., Chic.....	4,016	95 $\frac{1}{2}$ -95 $\frac{1}{2}$	96 $\frac{1}{2}$ -97	95-96 $\frac{1}{2}$	95 -96	96 -96 $\frac{1}{2}$	-95

\* Par \$50. \*\* Par \$100. \*\*\* \$1.50 per share paid in.

Late Philadelphia and Chicago sales by telegraph.

## Metal Market.

Office of The Iron Age, 232-238 William street, }  
NEW YORK, February 8, 1899. }

**Pig Tin.**—Since our last writing the market here has commenced to sag, and prices to-day are quoted 23.85c. to 24c., which is a decline of almost 1 $\frac{1}{2}$ c. since last week. The arrivals here thus far this month have been small, amounting to 515 tons, and, as far as we understand, deliveries from landing vessels have been quite free. London advanced to £114 2s. 6d., but since then has steadily declined, and was quoted at the closing to-day £107 17s. 6d. for spot, and £107 10s. for futures. The total decrease since last week amounts to £4 12s. 6d. Business throughout the week was light.

**Copper**—Has been very strong and maintained its advancing tendency. There is great difficulty in obtaining spot or nearby delivery, as refiners claim to be all sold up. Large lots cannot be had for at least two months, and some of the refiners claim to be sold up to May. Quotations to-day range from 17 $\frac{1}{2}$ c. to 18 $\frac{1}{2}$ c. for Lake Superior Ingot. Electrolytic Wire, Bars, Cakes and Ingots command 17 $\frac{1}{2}$ c. to 17 $\frac{1}{2}$ c., and Casting Copper is strong at 17 $\frac{1}{2}$ c. to 17 $\frac{1}{2}$ c. The market has advanced at least  $\frac{1}{2}$ c. above last week's quotations. It is claimed that in order to obtain prompt delivery purchasers have paid 18 $\frac{1}{2}$ c. for small quantities. The exports since the first of this month amount to about 2906 tons, according to the exchange figures. London has advanced to £73, but closed somewhat easier to-day with prices £71 12s. 6d. for both spot and futures. Best Selected shows a much greater advance and was quoted at the close to-day £78 5s. This is an advance of £6 above last week's figure. As this quality compares more closely with Lake Copper, it shows that actual Copper is in strong demand on the other side. The quotations for G. M. B. represent speculative Copper mainly.

**Pig Lead.**—The market during the latter part of last week was strong and advanced to 4.72 $\frac{1}{2}$ c., but has since fallen off to 4.57 $\frac{1}{2}$ c. to 4.62 $\frac{1}{2}$ c., which is the closing price to-day. This reaction is due to free sales by smaller speculators. St. Louis reports a weaker feeling and quotes the market 4.35c. nominal. London was up to £15 during the week, but closed to-day at £14 17s. 6d. for spot Soft Spanish.

**Spelter**—Shows additional advances since last week, spot goods being scarce. At this writing the market is 6c. to 6 $\frac{1}{2}$ c. for spot, while shipments from the West are not obtainable below 6.05c. The London market has gradually advanced from £26 5s. of last week to £27 5s., which was quoted at the close to-day. The Ore market has advanced still more rapidly and is quoted now at \$38.50 per ton. Last week's Ore output was another record breaker. It is claimed that purchases have been made in Joplin for shipment to London and Antwerp.

**Antimony**—Is strong and prices have advanced for Cookson's to 10c. to 10 $\frac{1}{2}$ c. Hallett's has advanced to 9 $\frac{1}{2}$ c. There is no Japanese on the market at the moment and stocks in the other brands are said to be very light.

**Nickel**—Remains firm with prices ranging from 38c. to 42c., according to quantity and delivery. Several small lots have been sold at 42c.

**Tin Plate.**—There has been no change in price during the last week. Orders have come into the New York office of the American Tin Plate Company in a larger volume than at any time previous. Orders were issued by the company to open up all mills on February 4. This order excludes, of course, those small plants of three mills or less, which the company consider unprofitable and do not intend to operate at all. Among this class the most prominent are the two Baltimore plants, the West Newton, Blairsville, Johnstown and Cleveland

plants. The stock of the American Tin Plate Company was regularly listed on the New York Stock Exchange last week. It is authoritatively stated that the new company have practically decided to purchase the eight mills of the St. Louis Stamping Company. We quote J. B. grade American Tin:

	F.o.b. New York.
Bessemer Steel, full weight.....	\$3.56 $\frac{1}{2}$
Bessemer Steel, 100 lbs.....	3.44
Bessemer Steel, 95 lbs.....	3.39
Bessemer Steel, 90 lbs.....	3.34
Bessemer Steel, 85 lbs.....	3.29
Bessemer Steel, 80 lbs.....	3.24
Charcoal Terne, same delivery—	.....
20 x 28, ordinary.....	6.00

## The Iron and Industrial Stocks.

The markets generally during the past week have shown a decline, particularly to-day. There was a good deal of activity in American Wire, Federal Steel, Tennessee Coal and Cambria, while American Tin Plate has appeared on the New York Stock Exchange for the first time. We append below quotations of a number of industrial stocks:

International Silver, Common.....	31 $\frac{1}{2}$ to 33 $\frac{1}{2}$
International Silver, 5s.....	to ..
Mich.-Peninsular Car, Common.....	45 to 47
Mich.-Peninsular Car, Preferred.....	101 to 103
Mich.-Peninsular Car, First 5s.....	to ..
Otis Elevator, Common.....	35 $\frac{1}{2}$ to 37
Otis Elevator, Preferred.....	87 to 89
H. B. Worthington, Common.....	41 to 42
H. B. Worthington, Preferred.....	104 to 106
Cramp's Shipyard Stock.....	79 to 80
Pratt & Whitney, Common.....	3 to 6
Pratt & Whitney, Preferred.....	40 to 50
E. W. Bliss, Common.....	122
E. W. Bliss, Preferred.....	125
U. S. Projectile.....	85 to 90
Barney & Smith Car, Common.....	to ..
Barney & Smith Car, Preferred.....	to ..
Pressed Steel, Common.....	56 to 57
Pressed Steel, Preferred.....	81 $\frac{1}{2}$ to 82 $\frac{1}{2}$

There seems to be some possibility of a great war in England of organized capital against organized labor in the future. The British trades unions have taken up the challenge of the employers in forming a league for protection against strikes by organizing a Central Federation of Labor almost exactly on the lines of the Employers' League. The association was started last week at a great meeting in Manchester, attended by representatives of many branches of labor from all parts of the United Kingdom. As yet the Federation has not secured the adhesion of some of the great trades unions, and many of the labor leaders oppose the plan as tending to do away with the autonomy of the unions. But the centralization scheme appears to have the support of a large majority of the union workmen. It is reported that the Federation starts with a membership of 600,000 and a large annual revenue assured. One interesting and encouraging feature of the Manchester Congress is that the speakers all deprecated strikes.

The Pressed Steel Car Company of Pittsburgh have received an order from the Union Pacific Railroad for 1000 steel cars, each of 80,000 pounds capacity, of the hopper and gondola type. The cars will be the first of their kind ever put into use west of the Mississippi River. The Union Pacific Railroad will also place an order shortly for 40 ten-wheel locomotives, each of 80 tons weight, and also eight 12-wheel locomotives, each to be 100 tons weight. The Pittsburgh Locomotive Works of Pittsburgh will likely fill a part of the order.

Among other orders for export the American Steel & Wire Company have sold to a point in South Africa 10,000 kegs wire nails and 1500 tons barb and plain wire.



## The Carnegie Company's Works.

(By Telegraph.)

PITTSBURGH, Pa., February 8, 1899.—In certain quarters the impression exists that the Carnegie Steel Company, Limited, of Pittsburgh had abandoned their original intention of going into the manufacture of steel cars on a large scale. In answer to this we can state authoritatively that the Carnegie Company have a very large force of draftsmen at work preparing plans for a large car plant, and as soon as these have been completed contracts for the buildings and equipment will be placed. The main building will contain the car shops proper, and in it everything will be manufactured entering into a steel car, with the exception of the springs, wheels, axles and air brake. The Carnegie Company will not go into the manufacture of car springs, for a time, but will make the wheels at the Edgar Thomson Foundry, at Braddock, the axles at the Upper Union Mills in Pittsburgh, while the cars will be equipped with Westinghouse brakes. All reports that the Carnegie Company would not make steel cars are entirely unauthorized, but, on the contrary, the company have already entered some orders for steel cars, among which is one for 2000 for the Baltimore & Ohio Railroad. J. B. Hardie has been appointed chief engineer of the new car department. In regard to reports circulated in Pittsburgh and New York that the Carnegie Steel Company would be recapitalized on a basis of \$150,000,000, while some reports put it as high as \$400,000,000, we can state positively that these reports are entirely untrue. The articles of limited partnership of the Carnegie Steel Company were taken out originally in 1891 by Carnegie Brothers & Co., Limited, and as articles of partnership in Pennsylvania extend for only 20 years, the limited partnership of the Carnegie Steel Company, Limited, will expire in 1901, and at that time the company will be re-organized, and the capital stock very much increased. It is not believed, however, that this will be done inside of two years. The statement that two new blast furnaces would be built in connection with the Carrie furnaces, at Rankin, is also untrue. It is the intention to rebuild the present two Carrie furnaces at Rankin, making them conform to the Duquesne furnaces, and each to have a daily capacity of not less than 500 tons of metal. The New Castle Engineering Works, New Castle, Pa., have received a contract from the Carnegie Steel Company, Limited, for 48 water seal valves. Some of these are to be 48 inches in size.

## American Tin Plate Company's Managers.

The operative department of the American Tin Plate Company, embracing the details of management of the various plants, has been placed under the direct charge of Warner Arms, the third vice-president of the company, and formerly president of the Falcon Tin Plate & Sheet Company of Niles, Ohio. Mr. Arms will be in charge of the managers, with headquarters at the company's office in the Marquette Building, Chicago. The district managers so far appointed are as follows:

Berthold Goldsmith, late of the Pennsylvania Tin Plate Company of New Kensington, Pa., who will be the manager of the Eastern district, embracing the tin plate mills at Demmler, Monessen, Connellsville, West Newton, Johnstown, Blairsville and Philadelphia, Pa.; Baltimore and Cumberland, Md., and Brooklyn, N. Y. Four of these works, however—namely, those in Brooklyn, Philadelphia and Baltimore—are unlikely to be continued in operation. Mr. Goldsmith will have his headquarters in the Lewis Block, Pittsburgh, Pa.

John C. Oliver, formerly manager of the Monongahela Tin Plate Company of Pittsburgh, will be the manager of the mills in the Pittsburgh district, including the Monongahela and Star mills, in Pittsburgh; the Pennsylvania and Pittsburgh mills, at New Kensington, Pa.; and the Ohio River mills, at Remington Station, Pa.

Cecil A. Robinson, late president of the La Belle Iron Works, Wheeling, W. Va., will become general manager of the La Belle mills, at Wheeling; the Laughlin mills, at Martin's Ferry, Ohio; the Aetna-Standard mills, at Bridgeport, Ohio, and the mills at Washington, Pa.

William Banfield, late manager of Wallace, Banfield & Co. of Irondale, Ohio, will be manager of that works, the Morton tin plate mills, at Cambridge, Ohio, and the Beaver plant, at Lisbon, Ohio.

## The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street, New York, February 8, 1899.

Conditions in the market during the last week have been good. Machinery merchants in general report having taken in a very fair amount of business and inquiry is reported to be very brisk. It is stated that a few good sized projects which have been hung up for a time are apparently coming to a head. We are informed that a certain inquiry which has made an appearance embodies about \$300,000 worth of machinery. The parties who ventured this much information were rather reticent, however, as to further details, and other concerns who were cognizant of the facts maintained a similar silence. Manufacturing representatives in the city report that their factories are fairly filled with work, and that it is very difficult to promise early deliveries. We know that several machine tool manufacturers in this vicinity have actually turned down orders because they could not comply with the requirements regarding delivery. Complaints from customers have been shown us by manufacturers which were written because the manufacturer was so crowded with work that deliveries which were promised for last year have not been made yet. There is, without a doubt, a stiffening of prices taking place. While too great an advance in the price of machine tools always results in a very unhealthy reaction, there is certainly a big excuse for a mending of the present condition of the price lists. The present condition of prices in machine tools fully justifies a pretty good advance, especially when the stiff condition of the iron, steel and metal markets is considered. For some time past machine tool prices have been so low that there has been very little if any margin of profit for the builder. Now that business is good, materials high, and efficient labor scarce, everything seems to be in a proper condition for a readjusting of prices which will bring them to their proper place. That machine tool builders seem to take this position has been made quite evident through a thorough canvass. Price cutting, which was quite rampant a short time ago, is being indulged in solely by the few concerns who are conspicuous in the market for that method of doing business. Instances have been brought to our notice where within the last week manufacturers have withdrawn their price lists and discount sheets, and have added to the former on certain lines, and lessened the latter on others.

Manufacturers of babbitt metals, bronzes for bushings and spindle boxes and similar compositions have increased their prices considerably. Genuine babbitt metal is now quoted at about 26½ cents per pound. Brass castings have also advanced materially in price, as have also valves, injectors and similar appliances which are composed largely of brass. These advances we understand average about 35 per cent. The cause of these advances is the extremely bullish condition of the metal markets, which can be seen by reference to our "Metal Market" column.

A manufacturer of pumps and hydraulic machinery in upper New York State has sent to the trade the following: "Owing to continued advances in cost of material entering into our manufactures, we are obliged to withdraw all quotations on our goods. We shall be pleased to make prices on your inquiries until such time as we can furnish revised discount sheets."

The General Electric Company have made additional purchases of machine tools for installation in their new machine shop, which is now building at Schenectady. Part of this was awarded to the Niles Tool Works Company.

Several weeks ago a combination of the large engine builders was alluded to in this column. The transfer on Saturday last of the Corliss Steam Engine Company of Providence, R. I., to a syndicate of capitalists is acknowledged to be the first step toward this combination. The capitalists who are back of the deal are principally those who promoted and are operating the Air Power Company. J. H. Hoadley, who represents the syndicate, is a director of the Air Power Company. Mr. Hoadley stated to a representative of *The Iron Age* that the syndicate which purchased the Corliss works is composed of several bankers and business men in this city, Boston and Philadelphia, and that the Cramps of Philadelphia hold the largest interest in it. He admitted that Richard Croker, who is in the Air Power deal, and himself were both largely interested in the venture also. Mr. Hoadley stated that the following interview, which was published in the *New York Times*, states the case as far as the deal stands at present:

"The property of the Providence Steam Engine Company was bought outright," said he. "The mortgage of the Corliss heirs was cleared, and they have nothing more to do with the works. The acquisition of the latter represents an investment of about \$1,600,000. The deal is the commencement of a combination of the

steam engine builders throughout the United States. There are twelve concerns, which, by combining, can control the engine-making business in this country, and, to a large extent, abroad also. Of these eight have already practically agreed to join, and it therefore does not make very much difference whether the others join or not, but the probability is that every manufactory will come in.

"The president of the new company will be Col. D. M. Thompson of Providence, formerly general manager of the B. B. & R. Knight cotton mill concern. The directors will be Edwin S. Cramp, the shipbuilder, who is president of the Greene and Wheelock steam engine companies; Lewis Nixon, W. H. Knight, former chief engineer of the General Electric Company, now chief engineer of the American Air Power Company, and Charles A. Lieb, owner of the Washington, D. C., railways and electric lighting plants. Each of the companies joining the combination will also have a representative on the board. The counsel for the company will be George S. Graham, District Attorney of Philadelphia, and Henry W. King of Worcester, Mass. The ultimate capital will, of course, depend upon the value of each concern that comes in, but it probably will approximate \$25,000,000. Extensive manufacturing works will be constructed either in New York or in New Jersey, but the location has not yet been definitely decided upon.

"Meanwhile we can make a good start with the Corliss works and the Greene and Wheelock factories will probably soon be running in conjunction with the Providence plant. The Corliss works are the largest in the world, and employ about 1800 men. The company have just secured a contract from the Boston Elevated Railway Company for the biggest steam engine ever built. It will weigh about 500 tons, and its horse-power will be 7,500.

"The motive which has prompted the combination of the engine builders is the success of compressed air as a motor power. Compressed air is the motor power of the future—the near future. It is destined to supplant electricity in this country and throughout Europe within a few years. I will venture to be even more specific and say within five years. It is far superior to electricity in every particular, and its installation is much cheaper. Its advantages have been fully demonstrated, and street railway companies in all the large cities of the Union are seeking estimates for equipping their systems with it in lieu of the trolley.

"The equipment with air power of the Twenty-eighth and Twenty-ninth street lines of the Metropolitan Street Railway Company in this city will show what the new power can do. The equipment will be of the finest.

"It was in order to secure the manufacturing end of the enormous business which the substitution in this country and abroad will mean that the engine builders decided to combine. That is the whole matter."

Asked whether the American Air Power Company would belong to the combination, Mr. Hoadley replied that he would not say whether negotiations to that end were pending or not, but added: "The company may possibly join in later on. You see, we hold all the patents for the invention in North and South America."

The Air Power Company, together with the New York Auto-Truck Company, which are practically controlled by the same interests, have previously assumed control of the Greene or American Wheelock Engine Company of Worcester, and the Rhode Island Locomotive Works of Providence.

We are informed that the E. P. Allis Company of Milwaukee are not adverse to the proposed consolidation, but are rather in favor of it. Among the other companies who are said to be in line are: McIntosh & Seymour, the Harris Corliss Engine Works of Providence, the Southwark Foundry & Machine Company of Philadelphia, Rice & Sargeant of Providence, Nordberg Company, Milwaukee, and the Frick Company of Waynesboro, Pa. H. B. Strickler, secretary of the last named concern, telegraphs us: "No knowledge of an option to Hoadley-Knight syndicate by Frick Company." The Southwark Foundry & Machine Company also deny having gone into the consolidation.

We are informed by Gould & Eberhardt of Newark, N. J., that they have sold all patents and rights on the "Eberhardt's Patent Tool Holder" to the Hugh Hill Tool Company of Anderson, Ind. The latter company will manufacture this tool holder of drop forged steel in connection with their standard line of tools and holders. Arrangements have been made with Patterson, Gottfried & Hunter of New York for the exclusive sales agency for the metropolitan district.

Mayor Hoos of Jersey City has signed the contract awarding the construction of the water works to Patrick H. Flynn of Brooklyn. The contract provides that the city purchase the plant when completed for \$7,595,000. That is the sum fixed if the municipality take the plant

within a year. If purchased later the price will be raised to \$7,995,000. Work will be commenced immediately on the erection of the plant and system.

McGuire & Hall of 26 Cortlandt street are asking for bids for structural iron work for a 12-story warehouse, to be erected corner of 125th street and Park avenue. Bids will also be asked about the first of next month for the ornamental iron work. There will be about \$50,000 worth of material needed.

The Pencoyd Iron Works have just completed the shipment of a 150-foot steel bridge to Santa Isabel, Mexico, for the Chihuahua & Pacific Railroad. The material weighed about 125 tons.

President J. S. Williams has been authorized by the Georgia & Alabama Railroad and the Georgia & Alabama Terminal Company to receive bids for the construction of a \$250,000 steel drawbridge to span the Savannah River between Savannah and Hutchinson's Island.

Reports from Council Bluffs, Iowa, state that the Chicago, Rock Island & Pacific Railroad will erect five steel bridges over Indiana Creek. R. R. Cable, Chicago, Ill., is president of the road.

Woolston & Brew, 141 Broadway, representatives of the Fisher Foundry & Machine Company, and the Bay State Iron Works, will be represented in Cuba and Porto Rico by Messrs. McMullen & Carroll, who will have their chief offices in Havana.

Mordecai T. Endicott, chief Bureau Yards and Docks, Navy Department, Washington, D. C., is advertising for bids to be received until February 18 for a workshop and boiler house for ordnance at the Philadelphia Navy Yard.

C. J. Brown, City Clerk, Winnipeg, Canada, will receive sealed tenders until April 3 for two pumping engines, each having a capacity of 5,000,000 imperial gallons per day. Specifications may be seen at the office of H. N. Ruttan, City Engineer.

Proposals will be received by the board of Mayor and Councilmen of the town of Tuskegee, Ala., until three o'clock p.m., February 15, for the furnishing of material for a complete system of water works, consisting of 24,334 feet of 8-inch, 6-inch and 4-inch cast iron pipe, 10,000 pounds special castings, 35 gate valves, 12 valve boxes, 2 boilers, 2 duplex pumps, 1 boiler feed pump, 1 vertical heater, 1 air lift, 1 steel stand pipe, pumping basin, tubular well and power station. Also for furnishing and erecting a 100 horse-power Corliss or automatic engine and accessories to complete electric light plant. Plans and specifications may be seen at Mayor's office, or at office of Alber & Byrne, Engineers, Birmingham, Ala. W. W. Thompson is Mayor of Tuskegee.

Westinghouse, Church, Kerr & Co. of 26 Cortlandt street, report a very favorable condition of export business. Among the orders received from the branch during the last week were: Two 160, one 260 and three 130 horse-power compound engines, direct-connected to Westinghouse generators, for France, and similar installation for Germany and Valparaiso.

It is stated that the Planter's Cotton Oil Company, Bonham, Texas, have completed arrangements to put up a 90-ton cotton seed oil mill with a 200 horse-power installation at Farmersville, Texas, and a 60-ton mill, with a 150 horse-power plant, at Durant, I. T.

A circular letter signed by John A. Topping, president of Aetna-Standard Iron & Steel Company, Bridgeport, Ohio, was sent out on Monday evening, February 6, notifying the stockholders of that concern that a majority of their body had signed an agreement for the transfer of the plants at Bridgeport and Mingo Junction to the syndicate represented by Moore Brothers of Chicago. While the sale will not be made directly to the American Tin Plate Company, yet it is understood in the trade that the purchase of the sheet bar mills, in which that of the Aetna-Standard Iron & Steel Company is included, is for the purpose of protecting the American Tin Plate Company on their sheet bars and to make them independent of the general market.

A special meeting of the stockholders of the Pittsburgh Plate Glass Company was held in the Carnegie Building, Pittsburgh, on Tuesday, February 7, at which the sale of 27 acres of ground at Duquesne, Pa., to the Carnegie Steel Company, Limited, was ratified. The annual report of John Pitcairn, president, was read, which showed the net earnings for last year to be at least \$1,250,000, much the largest of any one year in the history of the company. All the old directors were re-elected.

For the first time in about three years, a cargo of iron ore from Cartagena, Spain, was received this week in Baltimore, Md., by the Repner Line steamer "Barlby." The ore was consigned to the Pennsylvania Steel Company.



## Carnegie Rumors.

An astonishing number of rumors have been current during the past few days concerning the relations between some of the large consolidations and the Carnegie Steel Company, Limited, of Pittsburgh. Report has it offers for large amounts have been made to the Carnegie Steel Company for their property, and there seems to be little doubt that the preliminary negotiations have been attempted.

It is also reported that the Carnegie Steel Company have purchased the fleet of vessels of the Bessemer Steamship Company, and other property controlled by the Rockefeller interest, including the road to the Mesaba mines, dock property, &c.

In an interview with Andrew Carnegie to-day he stated that there was nothing whatever in these rumors. He used these words: "The Carnegie Steel Company are out of fashion in these days, a back number. They only know how to make and sell steel, and nothing about making securities, preferred and common stocks and bonds."

We understand that Mr. Carnegie is very actively pushing the improvements connected with his works, which will involve an expenditure for property and plant of about \$3,000,000. This includes the building of the new open hearth plant of ten furnaces, the completion of the large universal plate mill, the transfer of the three mills purchased from the Bethlehem Iron Company, and the construction of the car building works.

The output of the Carnegie Steel Works during the past month has been extraordinary, in quite a number of departments records having been made. Among the improvements now being brought to a conclusion is the increase in the blowing power at the Edgar Thomson Steel Works, which is expected to considerably increase the ingot capacity of that plant, and the additions of blowing engines of the Allis type to the Duquesne furnaces, which will probably bring up the production of these furnaces to close to 20,000 tons per month each. The plate mill capacity, as it will be when the improvements now under way are completed, will carry the output to 50,000 tons of plates per month. There have been some reports to the effect that contracts have been made with the American Tin Plate Company for the exclusive purchase of the tin plate bar output of the Carnegie Company. This, we understand, is entirely contrary to the policy of the Carnegie Steel Company.

It may be of interest to state that four of the staff of the Carnegie Steel Company, Limited, have just become partners—viz.: Messrs. Baker, the New York representative; Dickson, Case and McCloud.

## The American Steel & Wire Company.

The American Steel & Wire Company have acquired the wire rod and wire nail property of A. R. Whitney & Co., who controlled the Portage Iron Company, Limited, at Duncansville, Pa. This new plant was recently described in detail in *The Iron Age*, and since then some additions have been under contract.

We understand that A. R. Whitney has been elected a director of the American Steel & Wire Company, to take the place of the New Jersey resident director who has been in the Board thus far.

The American Steel & Wire Company have also acquired the property of the Puget Sound Wire & Steel Company of Everett, Wash., who were practically controlled by the Rockefeller interest. This plant has an annual capacity of 15,000 tons of wire, and makes 300,000 kegs of nails.

The bridge and structural iron workers of Pittsburgh will hold a meeting in that city on Friday, February 10, to complete arrangements for enlarging their membership. It is now proposed to take all the shop structural iron workers into the union.

## New East River Bridge.

### Specifications for Steel Towers and End Spans.

Proposals for building the steel towers and end spans of the New East River Bridge will be received by the commissioners on the 18th inst., at their office, 49 Chambers street, New York. The specifications for this work were issued yesterday. Specifications and drawings for this work were published in February, 1898, but the bids were returned as it was impossible to prosecute the work because the authorities refused to grant the necessary appropriations. The two principal changes made in the specifications since then are: Section 28 now reads: "All steel shall be acid open hearth, made by the pig and ore process from stock satisfactory to the engineer," and section 103a, "All foot castings shall be bedded on rust joints satisfactory to the engineer." The specifications require that when acid open hearth steel is made in mills producing other kinds no material will be accepted unless especially made for this work.

The steel will be of the following grades:

- I. Steel for angles, plates and anchor bolts.
- II. Steel for pins and rollers.
- III. Steel for rivets.
- IV. Steel for castings.

Grade.	I.	II.	III.	IV.
Maximum ultimate in pounds per square inch.....	68,000	.....	55,000	.....
Minimum ultimate in pounds per square inch.....	60,000	68,000	47,000	60,000
Minimum elastic limit in pounds per square inch.....	33,000	35,000	30,000	.....
Minimum percentage of elongation in 8 inches.....	20	17	25	.....
Minimum percentage of elongation in 2 inches.....	.....	.....	.....	20

In all steel the amount of silicon shall be less than one-tenth of 1 per cent. for grades I, II, and III, and less than thirty-five hundredths of 1 per cent. for grade IV, of phosphorus less than eight hundredths of 1 per cent., of sulphur less than three hundredths of 1 per cent. and of manganese less than five-tenths of 1 per cent. Steel shall not be melted below from twelve hundredths to fifteen hundredths of 1 per cent. of carbon nor recarbonized in a careless, uncertain or irregular manner. All ingots for plates, angles and other shapes shall be bottom cast. All shapes shall be rolled from billets, blooms or slabs which are of a size to reduce 16 times in area in forming the shape. All rolled and hammered shapes shall be entirely free from piping, checks, cracks or other imperfections, and shall have smooth finished edges and surfaces.

For the dimensions, &c., the contractor is referred to the drawings accompanying the specifications. Each tower will consist of eight columns strongly braced laterally in all directions. At about the floor level they will be provided with a system of girders to support the ends of the end spans, as well as the ends of the suspended structure of the main span of the bridge. At the tops of the towers there will be another system of girders, on which will rest the saddles with their friction rollers complete and ready to receive the cables. The end spans will form the portions of the bridge between the towers and the anchorages. No part of the weight of these spans is to be supported by the cables. Between the tower and the anchorage on each side of the river there will be a steel pier, with its foundations, to form an intermediate support for the end span.

The work must be completed on or before February 28, 1900.

Thomas Francis Comfort, proprietor of the Manayunk Brass & Iron Foundry of Philadelphia, died suddenly of heart disease on January 28, aged 60 years.

The Detrick & Harvey Machine Company, Baltimore, Md., are about to add to their plant a new building 100 x 70 feet, which they will use as a machine shop and erecting shop. The contract for the building will be given out in a few days, and orders will shortly be placed for a traveling crane and other machinery required for the shop equipment.

The Vesuvius Iron Company, Pedro, Ohio, will blow in the Vesuvius Furnace in about two weeks, for the wind up of Vesuvius iron, and will probably make 700 to 800 tons more, which will wind up Vesuvius charcoal cold blast pig iron, as stock is unobtainable from which to make it.

Furnace C, Maryland Steel Company, Sparrow's Point, Md., was successfully blown in on February 4; the first cast being No. 1 Bessemer. This furnace has been recently relined and will run on a mixture of Cuban and Lake ores (Mesaba), possibly all Cuban. During the last blast of this furnace it had 16 tuyeres, but has been changed back to 8; capacity of furnace about 300 tons and upward.

# HARDWARE.

## Condition of Trade.

**T**HE general condition of the market remains substantially as at our last report, except that there has been a further stiffening in prices on a good many lines and a large demand for goods. The rapid advances which have taken place in the price of Ingot Copper have necessitated materially higher prices in the manufactured products, as fully noted below. Not only such goods as Sheet Brass and Copper, Brass and Copper Wire, Copper Rivets and Burrs, &c., are higher, but all articles into which Copper enters as a material are given a firm tone in proportion to the quantity of the metal which enters into their production. A great many lines of goods are thus affected where no open change in quotation has been made. Lead also is higher, and advances have been made in Shot, Lead Pipe, &c. The increased cost of Spelter is operating to advance the price of galvanized goods. The condition of the Iron market also gives a very strong tone to all heavy goods, as is indicated by the advance in Wire and Wire Nails, and makes its influence felt to a greater or less degree along the whole line. In this state of things the market is characterized by an upward tone, and the advances which are announced by the manufacturers of Builders' Hardware and general Shelf Hardware cover a very wide range of articles. The demand is setting in very actively and many manufacturers are supplied with orders which will keep them busy for a considerable time. The buying, indeed, has something of a speculative tone, inasmuch as a good many large houses are placing heavy orders sufficient to cover their requirements for some time to come, evidently under the conviction that prices are not likely to weaken and may go higher. The apprehension of a possible scarcity has also something to do with the freedom with which orders are being placed. Manufacturers are under these circumstances feeling much more independent than usual, and are disposed to name higher prices than have been ruling.

### Chicago.

(By Telegraph.)

The Shelf Hardware trade is fully as active as in previous weeks and jobbers see no signs of a reaction. They are, on the contrary, making increasing preparations for the spring trade. Further advances have occurred during the week, the most notable being the higher rates made on Wire Nails and other Wire products. The advances so far made have not checked business, but the demand continues to keep up to its former proportions or very nearly so. Copper Sheets and Bottoms booked another advance of 2 cents during the week. Poultry Netting and Field Fencing are marked up another 5 per cent. Jobbers say that a great deal of time and care are required to keep track of the advances now coming, as they are so many and so frequent. The higher price of Tin Plate and the consolidations of Tinware manufacturers have caused a much larger demand for Tinware, and as far as advances have been made they have stimulated additional business. Traveling

salesmen are being advised not to take orders for future delivery, but only for immediate shipment, and to adhere strictly to the highest prices given them. The Heavy Hardware trade is in excellent shape, with an active demand for everything required at this season.

### St. Louis.

(By Telegraph.)

The trade, surprisingly active at this time of the year, shows a steady increase. St. Louis as a Hardware center is a fact to be recognized and it is being so appreciated. The general advance now made by all the large manufacturers of Hardware has been kindly met. The trade are almost unanimous in the opinion that manufacturers have been making little or no profit. It is claimed that travelers are well sustaining the increased prices. In times like these the advantage gained by underselling is but temporary, and failure to base selling prices on the market tends to weaken confidence all along the line. Heavy orders are being entered for Enameled and Tin Ware in anticipation of further advances. Copper goods are likely to move further up in price, and Zinc in sheets has been increased to \$7.50 per 100 pounds base in carload lots at mills. Wire Nails and Barb Wire are credited with another advance of 10 cents per 100 pounds, and the charge for Galvanized Barb Wire is now advanced to 40 cents per 100 pounds. Poultry Netting goes up an additional 5 per cent., and there is prospect of a further advance in this and the finer Wire Cloth, as the scarcity of Wire is felt. The great extent of carload business done by jobbers in Wire Nails and Wire is causing surprise. Tin Plate is selling well at the advance. Builders' Hardware is moving remarkably well and to a degree unaccounted for at this season. Carriage and Machine Bolts are quoted at higher prices, and there may be some interesting developments in the Stove Bolt trade. Copper Rivets and Burrs are in active demand, despite three advances in as many days. The St. Louis Shot manufacturers are doing a good business at increased prices, in view of advance in Pig Lead. Prices on Brass Goods have been withdrawn, and holders of finished goods hesitate to quote prices except for immediate needs.

### From Arthur Brittan.

During the past months, having made a business trip through the West, South and East, I can but say that the expectations of the most sanguine are being realized. Large amounts of money have been invested in manufacturing enterprises; pools organized; prices advanced. Labor is fully employed at increased wages; every wheel is turning. Orders are so plentiful that discretion bids us beware, as we can no longer contract for our supplies. It is but wisdom to withhold our prices for future deliveries until we may know what we shall pay for Iron, Copper, Zinc, Lead, &c. On the other hand the buyer is using his money and credit in filling storehouses and contracting where he can for future wants.

Business has improved and will increase. Manufacturers and business men who are not hampered with competitors who foolishly will neither live nor let live, will make use of their opportunities and long remember the large demands of 1899.

I am asked what is there new in Shovels and Spades? I see my competitors are getting in large stocks. Will Shovels advance? Not that any one knows of. It is the demand requiring larger stocks. Even the Lock manufacturers have awakened to the necessity of an advance that they might get even former costs, and they may even



work to make dividends in 1899. If so, must make further advances.

A leading jobber lately asked, "How is it that one line of goods, whose manufacturers have notoriously lost money for years, have not yet advanced? Are they fools or purposely working toward the poorhouse?" And I modestly replied, "Don't Axe me."

### Notes on Prices.

**Wire Nails.**—On Monday an advance was made in the price of Wire Nails by the American Steel & Wire Company as follows: \$1.65, base, f.o.b. Pittsburgh or Cleveland; to single carload buyers, for either straight or mixed cars of Nails and Wire. These quotations are made for immediate shipment, prices subject to change without notice. As noted in our last issue, the minimum weight of carload shipments of Nails and Wire has been advanced to 30,000 pounds instead of 24,000 pounds as heretofore.

**New York.**—The New York Wire Nail market has been characterized by a firm tone and a considerable movement of business. The trade have evidently been under the impression that Nails were likely to go higher or at least to hold their own, and purchases were accordingly regarded as safe. The market at the advanced prices is represented by the following quotations: Carload lots on dock, \$1.80; small lots from store, \$1.85 to \$1.90.

**Chicago, by Telegraph.**—Manufacturers made an advance of 10 cents per keg on Saturday. Carload lots are now quoted at \$1.75 rates, Joliet or De Kalb. They report an active business during the week which shows no signs of an early abatement. Jobbers are having a very good demand, and now quote small lots from stock at \$1.80.

**St. Louis, by Telegraph.**—An advance of 10 cents has been made in Wire Nails, which are now quoted to jobbers in carload lots at \$1.75, base. Jobbers quote \$1.80 in single cars and report a surprising business. As the advances continue there is a disposition shown to come in out of the wet. Some prospective buyers hand in orders at old prices, but their wants cannot be met at former figures.

**Pittsburgh.**—Taking effect Monday, February 6, the American Steel & Wire Company announced an advance in the price of Nails of 10 cents a keg. This advance came in the nature of a surprise to the trade, as it was believed the price would be held at \$1.50 for a time at least. The demand for Nails is only moderate, a good many of the large jobbers having contracts placed at lower prices on which they are now specifying. Wallace H. Rowe has been made manager and Stephen W. Tener assistant manager of Pittsburgh district of the American Steel & Wire Company, operating seven distinct works, these being Rankin Works, Pittsburgh Wire Company, Beaver Falls Works, New Castle Works, Oliver Wire Company, Bessemer Steel plant and Edith furnace of Oliver & Snyder Steel Company, recently purchased outright. The general offices will soon be consolidated in the Tradesmen's Building, this city. We quote Wire Nails for February shipment only as follows: To jobbing trade, \$1.60, base, with  $2\frac{1}{2}$  cents advance per 100 pounds, less than carloads, direct shipment on contracts; to the single carload buyer, 5 cents advance or \$1.65, base; less than carload lots to retailer, 10 cents advance over price to jobbers, all f.o.b. cars Pittsburgh or Cleveland.

**Cut Nails.**—The Cut Nail market is in substantially the same condition as last week, there being certainly no weakening in its tone. On the other hand, the strength of Wire Nails and the disposition of the Cut Nail manufacturers to work together have given a steadiness to prices, which are still represented by the quotation of \$1.25 to \$1.30, f.o.b. Pittsburgh. Freight is added to the point of destination. It is not as easy now as a week ago to obtain the lower figure.

**New York.**—Cut Nails are moving more freely in view of the generally improved condition of the market and the confidence that prices are likely to be maintained. Quotations are as follows: Carload lots on dock, \$1.40; small lots from store, \$1.50.

**Chicago, by Telegraph.**—A better movement is reported in Cut Nails, and carload lots have been advanced to \$1.37½, Chicago. The jobbers have not yet marked up their prices to correspond, but continue to quote small lots from stock at \$1.40.

**St. Louis, by Telegraph.**—Generally quoting small lots may be placed at \$1.50 at store. Manufacturers are benefiting by Wire Nail situation, but are loth to part with anything but small quantities.

**Pittsburgh.**—It is probable the manufacturers of Cut Nails will make an advance of 10 cents in price to correspond to the similar advance in Wire Nails. We are advised there is a moderate demand for Cut Nails, and the market is very firm. We quote at \$1.30, base, f.o.b. cars Pittsburgh, but it is not improbable this price will be advanced within a few days.

**Barb Wire.**—An advance that was not unlooked for by the trade was made by the American Steel & Wire Company on Monday in the price of Barb Wire. Present quotations are as follows: \$1.75 for Painted and \$2.15 for Galvanized, f.o.b. Pittsburgh or Cleveland, to single carload buyers, for either straight or mixed cars of Wire and Wire Nails. These quotations are made for immediate shipment, prices subject to change without notice. To retail purchasers of less than carload lots an advance of 5 cents is made over carload prices.

**New York.**—In the New York market Barb Wire for export is receiving a good deal of attention and the volume of business is good. A number of important inquiries from foreign markets are in hand. The outlook for a heavy export trade is promising provided the advance in price does not prove too great. Quotations at the advanced price on Four-Point Galvanized are as follows: Carload lots on dock, \$2.30; small lots from store, \$2.45.

**Chicago, by Telegraph.**—An advance was made on Saturday in the price of Plain and Barb Wire. The spread on Galvanized was made a little greater, being now 40 cents per 100 instead of 35 cents. Painted Barb Wire is quoted in carload lots at \$1.85, Joliet or De Kalb, while Galvanized stands at \$2.25, with Ellwood and Baker Wire 5 cents higher. Staples are held at the same price as Barb Wire. Carload lots of Plain Annealed Wire have been made \$1.60, base, while the extra for Galvanized up to and including No. 14 is 40 cents; Nos. 15 and 16, 60 cents; Nos. 17 and 18, 85 cents. Jobbers ask the usual advance for small lots, and report an exceedingly good demand.

**St. Louis, by Telegraph.**—The colder weather has somewhat checked movement of Barb Wire from retail stores. The week brings an additional advance and the quotation to the larger trade is now \$1.85 in carload lots. As in Wire Nails a splendid carload business is presented and jobbers quote \$1.90 in single cars, smaller quantities at \$1.95, Painted. The old prices on Galvanized no longer rule and an advance of 40 cents per 100 pounds is now in effect.

**Pittsburgh.**—Taking effect on Monday, February 6, the American Steel & Wire Company made an advance of \$3 a ton on Galvanized Barb Wire. We are advised there is an active demand and the outlook for a large spring trade is excellent. Shipments by the mills are large, buyers specifying very freely on contracts placed some time since. We quote for February shipment: Painted Barb Wire at \$1.70; Galvanized Barb Wire, \$2.10, f.o.b. cars Pittsburgh or Cleveland. To the jobbing trade,  $2\frac{1}{2}$  cents advance per 100 pounds, less than carload lots, direct shipment on contracts; to the single carload buyer, 5 cents advance over the jobbing price; less than carload lots to retailer, 10 cents advance over jobbing price.

**Smooth Wire.**—An advance has also taken place in the price of Smooth Wire, new quotations being as follows: \$1.50, base, f.o.b. Pittsburgh or Cleveland, to single carload buyers. For less than carloads the price of \$1.55 is made. Extras now charged for Galvanizing are as follows:

	Cents.
Nos. 6 to 14.....	40
Nos. 15 and 16.....	60
Nos. 17 and 18.....	85

**Pittsburgh.**—An advance of \$2 a ton has been made in prices of Smooth Wire and the differential on Galvanized over Plain Annealed has been increased to 40 cents instead of 35 cents as heretofore. These prices became effective on Monday, February 6, and are good for February shipment only. There is a heavy demand for Smooth Wire, buyers specifying very freely on contracts placed some time since, and are also placing good sized orders. We quote Smooth Wire at \$1.45, base, with 40 cents advance for Galvanized, f.o.b. Pittsburgh or Cleveland. To the jobbing trade, 2½ cents advance per 100 pounds, less than carload lots, direct shipment on contracts; to the single carload buyer, 5 cents advance over the jobbing price; less than carload lots to retailer, 10 cents advance.

**Wire Rope.**—No action has as yet been taken by the manufacturers of Wire Rope so far as the adoption of a new list is concerned, but it is understood that the matter is under advisement, with the probability of an advance in prices before long.

**Copper Wire.**—In sympathy with the upward movement of the Copper market an advance of 1 cent per pound was made February 3 in the prices of Copper Wire. The tone of the market continues strong, with a possibility of further advance. Quotations are made only for immediate acceptance. Present quotations are as follows, terms net cash 30 days, less one-half of 1 per cent. for cash in ten days, actual freight being allowed to points on or east of the Mississippi River on quantities not less than 100 pounds:

**Hard and Soft Drawn Copper Wire—B. and S. Gauge**

Nos.	0000 to 5	9 and 10	11 and 12	13	14	15
	20c.	20½c.	20¾c.	20¾c.	20¾c.	21c.
Nos.	16	17	18	19	20	
	21¼c.	21½c.	22c.	22¼c.	22¾c.	

**Hard and Soft Drawn Tinned Copper Wire—B. and S. Gauge.**

Nos.	0000 to 5	9 and 10	11 and 12	13	14	15
	20½c.	21c.	21¼c.	21¾c.	22c.	22¾c.
Nos.	16	17	18	19	20	
	22¾c.	23c.	23½c.	24c.	24¼c.	

**Weatherproof, Fireproof and Weatherproof and Underwriters' Wire—B. and S. Gauge.**

Nos.	0000 to 8	9 and 10	11 and 12	13 and 14
	20¾c.	21¼c.	22¾c.	24¼c.
Nos.	15 and 16	17 and 18	19 and 20	
	25¼c.	27¼c.	29¼c.	

**Cotton Covered Magnet Wire—B. and S. Gauge.**

Nos.	0000 to 6	7 and 8	9 and 10	11 and 12
S. C. C.	21¼c.	21½c.	23 c.	24¼c.
D. C. C.	22 c.	23 c.	24¼c.	26¼c.
T. C. C.	25 c.	26¼c.	27¼c.	31 c.
Nos.	13 and 14	15 and 16	17 and 18	19
S. C. C.	26¼c.	27¼c.	29¼c.	31¼c.
D. C. C.	28¼c.	29¼c.	31¼c.	33¼c.
T. C. C.	33¼c.	34¼c.	37 c.	39¼c.

Nos. 20 to 40, inclusive, 50 per cent. discount from standard list.

**Office and Annunciator Wire—B. and S. Gauge.**

Nos.	12	13 and 14	15 and 16	17 and 18	19 and 20
Office.	23¼c.	25 c.	26¼c.	28 c.	30 c.
Annunciator.	23 c.	24¼c.	26 c.	27¼c.	29¼c.

**Flexible Lamp Cord—B. and S. Gauge.**

Nos.	12	14	16	18	20	22
Cotton.	32c.	21c.	12c.	9c.	7c.	7c.
Silk.	40c.	20c.	19c.	16c.	12c.	12c.

**Files.**—Notwithstanding the fact that there is an improved demand for Files, and the slightly increased cost of the material, prices do not show much indication of improvement. Competition between some of the prominent makers is so active that there has been within a month or two something of a yielding in prices, and low quotations are still being made.

**Market Wire.**—There is a strong tone pervading the market for all kinds, and low quotations have been called in and advanced prices are ruling. The manufacturers are very independent and refusing to accept orders for future delivery.

**Copper Rivets and Burrs.**—While the manufacturers have advanced their price to 50 per cent. discount, several of the prominent jobbing houses in the West have been selling freely at old prices, discount 60 per cent. having

been current within a few days. It is not expected that this figure will be long available, as the jobbers cannot replenish their stocks at former prices.

**Corrugated Sheets, Roofing, &c.**—It is evident that the list recently suggested has not yet come into general adoption. Some of the manufacturers express themselves as opposed to it, and others are considering the question as to whether or not it will be advisable to use it. Net prices instead of list and discount continue to be generally used, and there is a good deal of diversity in the quotations of different manufacturers. The market, however, in this line is characterized by a better tone than heretofore, and a number of the manufacturers have withdrawn quotations.

**Cartridges, Loaded Shells, &c.**—The condition of the Copper market has affected materially the prices of Cartridges, &c., and the manufacturers are making higher quotations. Present prices are represented by the following quotations of the Union Metallic Cartridge Company, Bridgeport, Conn., and 313 and 315 Broadway, New York, the lower figures named being for round lots, terms f.o.b. New York or Bridgeport, with a further discount of 2 per cent. for cash in 10 days:

	Per cent.
Rim Fire Cartridges.....	50 to 50 and 5
Shot Cartridges.....	50 and 15 to 50 and 5 and 15
Central Fire " Shot " " " " "	Pistol and Rifle sizes.....25 to 25 and 5
" " " " " " " "	25 and 15 to 25 and 5 and 15
" " " " " " " "	military and sporting sizes..
" " " " " " " "	15 and 5 to 15 and 10
" " " " " " " "	sporting sizes..
" " " " " " " "	15 and 15 to 15 and 5 and 15
Rim Fire Cartridges, military sizes.....	15 and 5 to 15 and 10
Blank " 22 cal. short r.-f., \$1.50, 32 cal. short r.-f., \$2.75 per 1000.....	10 and 5 to 10 and 10
Blank Cartridges, 32 cal. S. & W. c.-f., \$5.50, 38 cal. S. & W. c.-f., \$7 per 1000.....	10 and 5 to 10 and 10
Other Blank Cartridges, 10 per cent. less than Ball Cartridges.	
Bullets and Primed Shells.....	15 and 10 to 15 and 5 and 10
Brass Shot Shells, Club brand, 10 and 12 ga. only..	65 and 5 to 65 and 10
" " " " " " " "	First quality, all gauges..
" " " " " " " "	60 and 5 to 60 and 10
Paper " " " " " " " "	New Club brand, 10 and 12 ga..
" " " " " " " "	33½ and 5 to 33½ and 10
" " " " " " " "	14 ga..
" " " " " " " "	20 and 10 and 5 to 20 and 10 and 10
" " " " " " " "	Primrose Club brand, 10 and 12 ga..
" " " " " " " "	33½ to 33½ and 5
" " " " " " " "	16 and 20 ga..
" " " " " " " "	20 and 10 and 5 to 20 and 10 and 10
" " " " " " " "	Nitro brand, 10, 12, 14, 16, 20, 24 and 28 ga..
" " " " " " " "	15 to 20
" " " " " " " "	High Base brand, 10, 12, 16 and 20 ga..
" " " " " " " "	15 to 20
" " " " " " " "	Smokeless brand, 10, 12, 16 and 20 ga..
" " " " " " " "	33½ and 10 and 5 to 33½ and 10 and 10
" " " " " " " "	Acme brand, 10, 12 and 16 ga..
" " " " " " " "	33½ and 10 and 5 to 33½ and 10 and 10
" " " " " " " "	Trap brand, 10, 12, 16 and 20 ga..
" " " " " " " "	33½ and 10 and 5 to 33½ and 10 and 10
" " " " " " " "	brand, 8 ga..
" " " " " " " "	25 and 10 and 5 to 25 and 10 and 10
" " " " " " " "	First grade, 4 ga..
" " " " " " " "	25 and 10 and 5 to 25 and 10 and 10
Wads, all kinds.....	20 and 5 to 20 and 10
Bullet Breech Caps, swaged ball, \$1.75 per 1000..	
" " " " " " " "	25 and 10 and 5 to 25 and 10 and 10
Conical Bullet " " " " " " " "	ball, \$2 per 1000.....7½ to 10
U. M. C. Primers, all kinds, with anvil, in quarter boxes, \$1.20 per 1000.....	10 and 2½ to 10 and 7½
U. M. C. Primers, Nos. 1 and 2, in tenth boxes, \$1.25 per 1000.....	10 and 2½ to 10 and 7½
Berdan Primers, Nos. 1, 1½ and 2, \$1 per 1000.....	5 to 10
B. L. Caps, for Sturtevant Shells, \$1 per 1000.....	5 to 10
F. C. trimmed edge Percussion Caps, central fire, 100 M lots, \$0.35	
U. M. C. ground " " " " " " " "	(heavy) central fire,
100 M lots, \$0.45.	
Musket Caps, water proof, one-tenth tin boxes, 100 M lots, \$0.55.	
Loaded Shells New Club brand, black powder..	
" " " " " " " "	40 and 5 to 40 and 10
" " " " " " " "	Primrose Club (long heads), black Powder..
" " " " " " " "	40 to 40 and 7½
" " " " " " " "	Smokeless, Acme and Trap brands, Nitro
Powder.....	40 and 10 and 10 and 5 to 40 and 10 and 10 and 10

**Wire Cloth.**—The market for Painted Wire Cloth has a decided upward tendency, with a disposition on the part of some of the leading makers to refuse further contracts except at a marked advance. Several of the large companies are reported to hold orders for a large percentage of their output at low figures and decline further business at other than increased rates. An effort is being made by New York jobbers to have a concerted advance by the jobbers in Painted Wire Cloth to \$1 per 100 square feet. One manufacturing concern largely booked ahead quotes



95 cents on lots of 25 rolls, while another house would take orders at from 80 to 90 cents for fair lots.

**Ribbon Wire.**—The manufacturers of Ribbon Fence Wire on February 4 made an advance in this commodity approximating  $\frac{1}{4}$  cent a pound, f.o.b. Lots of 2,000 pounds or less are quoted \$3 per 100 pounds, and the price graded by various stages up to car lots of 30,000 pounds.

**Sheet Copper.**—On account of a farther and important advance in the price of Ingot the manufacturers of Sheet Copper made an advance of 2 cents per pound under date February 2, making the base price 21½ cents. The condition of the market in Brass and Copper goods is so unsettled that manufacturers are emphasizing the fact that any quotations either verbal or written are subject to change without notice. We give herewith the card showing the extras on base price which are regularly charged.

view of the frequent changes in the market on this line this card of extras will be convenient, as from it in connection with a quotation of the base price the price of sheets of any given size may readily be determined:

**Wrought Goods.**—On February 4 the manufacturers of Wrought Iron goods advanced them nearly  $7\frac{1}{2}$  per cent., the published price now being 85 and 25 per cent., with a marked concession from these figures on large quantities.

**Yellow Metal.**—Yellow Metal for sheathing vessels on February 6 was advanced 2 cents a pound, making the present base price 17 cents a pound.

**Lockwood Mfg. Company.**—Lockwood Mfg. Company, South Norwalk, Conn., Allerton-Clarke Company, agents, 97 Chambers street, New York, under date February 2 announce that the cost of material entering into the manufacture of Builders' Hardware is so rapidly increasing that they have advanced the prices on this line, with the exception of Steel Butts, 10 per cent.

**Walter W. Woodruff & Sons.**—Under date February 1 Walter W. Woodruff & Sons, Mount Carmel, Conn., announce that owing to the very low prices at which their goods have been sold, and the heavy and continued advance in metal and all material entering into their production, they are compelled to withdraw all quotations.

SHEET COPPER EXTRAS.

SIZES OF SHEETS.		64 oz. & over.	32 oz. to 64 oz.	24 oz. to 32 oz.	16 oz. to 24 oz.	14 oz. & 15 oz.	12 oz. & 13 oz.	10 oz. & 11 oz.	8 oz. & 9 oz.	Light
		50 lb. sheet, 30 x 60 and heavier	25 to 50 lb. sheet, 30 x 60	18½ to 25 lb. sheet, 30 x 60	12½ to 18½ lb. sheet, 30 x 60	11 to 12½ lb. sheet, 30 x 60	9½ to 11 lb. sheet, 30 x 60	7½ to 9½ lb. sheet, 30 x 60	6½ to 7½ lb. sheet, 30 x 60	er than 8 oz.
Extra Cents per pound advance over base price.										
Not Wider than 30 ins.	Not longer than 72 ins.	Base.	Base.	Base.	Base.	1	2	3	6	9
	Longer than 72 ins. Not longer than 96 ins.	Base.	Base.	Base.	Base.	1	3	6	9	
	Longer than 96 ins.	Base.	Base.	Base.	Base.	2	6			
Wider than 30 ins. but not Wider than 36 ins.	Not longer than 72 ins.	Base.	Base.	Base.	Base.	2	4	7	10	
	Longer than 72 ins. Not longer than 96 ins.	Base.	Base.	Base.	Base.	2	6	9		
	Longer than 96 ins. Not longer than 120 ins.	Base.	Base.	Base.	1	3				
	Longer than 120 ins.	Base.	Base.	1	2					
Wider than 36 ins. but not Wider than 48 ins.	Not longer than 72 ins.	Base.	Base.	1	2	4	7	10		
	Longer than 72 ins. Not longer than 96 ins.	Base.	Base.	1	3	5	8			
	Longer than 96 ins. Not longer than 120 ins.	Base.	Base.	2	4	8				
	Longer than 120 ins.	Base.	1	3	6					
Wider than 48 ins. but not Wider than 60 ins.	Not longer than 72 ins.	Base.	Base.	1	3	6	11			
	Longer than 72 ins. Not longer than 96 ins.	Base.	Base.	2	4	9				
	Longer than 96 ins. Not longer than 120 ins.	Base.	1	3	6					
	Longer than 120 ins.	1	2	4	8					
Wider than 60 ins. but not Wider than 72 ins.	Not longer than 96 ins.	Base.	1	3	8					
	Longer than 96 ins. Not longer than 120 ins.	Base.	2	5	10					
	Longer than 120 ins.	1	3	8						
Wider than 72 ins. but not Wider than 108 ins.	Not longer than 96 ins.	1	3	6						
	Longer than 96 ins. Not longer than 120 ins.	2	4	7						
	Longer than 120 ins.	3	5	9						
Wider than 108 ins.	Not longer than 132 ins.	4	6							
	Longer than 132 ins.	5	8							

## SHEET COPPER EXTRAS.—Continued.

**Circles, Segments and Pattern Sheets**, three (3) cents per pound advance over prices of Sheet Copper required to cut them from.

**All Cold or Hard Rolled Copper, also Cold Rolled and Annealed Copper Sheets and Circles**, wider than 17 in., 14 oz. per square foot and heavier, one (1) cent per pound over the foregoing prices.

**All Cold or Hard Rolled Copper, also Cold Rolled and Annealed Copper Sheets and Circles**, wider than 17 in., lighter than 14 oz. per square foot, two (2) cents per pound over the foregoing prices.

**All polished Copper, including Copper Bottoms and Flats**, 20 in. wide and under, one (1) cent per pound advance over the price for Cold Rolled Copper.

**All Polished Copper**, over 20 in. wide, two (2) cents per pound advance over the price for Cold Rolled Copper.

## Tinning.

Tinning Sheets, on one side, 10, 12 and 14 x 48, each, . . . . .	6c.
Tinning Sheets on one side, 30 x 60 each, . . . . .	25c.
For Tinning Boiler Sizes, 9 in. (14 x 60), each, . . . . .	12c.
For Tinning Boiler Sizes, 8 in. (14 x 56), each, . . . . .	10c.
For Tinning Boiler Sizes, 7 in. (14 x 52), each, . . . . .	8c.
Tinning Sheets, on one side, other sizes, per square foot, . . . . .	2c.
For Tinning both sides, double the above prices.	

## EXTRAS—COPPER BOTTOMS, PITS AND FLATS.

Extra cents per lb. advance over base price.

14 oz. to square foot, and heavier, per lb., . . . . .	Base.
12 oz. and up to 14 oz. to square foot, per lb., . . . . .	1c.
10 oz. and up to 12 oz., . . . . .	3c.
Lighter than 10 oz., . . . . .	6c.
Circles less than 8 in. diam., 2c. per lb. additional.	
Circles over 13 in. diam. are not classed as Copper Bottoms.	
Polished Copper Bottoms and Flats 1c. per lb. extra.	

**Cast Iron Soil Pipe.**—An advance has been made in the price of Cast Iron Soil Pipe, the manufacturers having formed a strong association. Prices for carload lots are as follows:

	Per cent. discount.
Standard . . . . .	75 and 5 to 75 and 10
Extra Heavy . . . . .	75 and 10 and 5 to 80
Fittings . . . . .	80 to 80 and 5

**Shot.**—Still another advance has been made in Shot by the Eastern manufacturers, making 15 cents advance since January 26. The following are the latest prices announced, under date 3d inst., terms being net cash 30 days or 2 per cent. discount for cash in ten days:

Drop Shot, sizes smaller than B, per 25-pound bag, . . . . .	\$1.45
" " B and larger sizes, per 25-pound bag, . . . . .	1.70
Buck Shot, per 25-pound bag, . . . . .	1.70
Chilled Shot, per 25-pound bag, . . . . .	1.73
Dust Shot, per 25-pound bag, . . . . .	2.10

On lots of 1 ton or over special discount of 40 cents per 100 pounds (10 cents per bag) will be allowed. Western prices are somewhat lower than those quoted above.

**Lead Pipe and Sheet Lead.**—Lead Pipe and Sheet Lead have been advanced another  $\frac{1}{4}$  cent under date 2d inst., present prices being as follows, subject to the usual discount of 20 per cent.:

	Cents.
Lead Pipe, per pound, . . . . .	6 $\frac{1}{4}$
Sheet Lead " " . . . . .	7 $\frac{1}{4}$

**Bolt Copper.**—In connection with the price of Ingot Copper, as alluded to above, Bolt Copper was advanced to 21 $\frac{1}{4}$  cents. The extras charged on the smaller sizes are as follows:

$\frac{3}{8}$ -inch diameter and over, . . . . .	Base.
$\frac{1}{2}$ -inch diameter, . . . . .	Advance 2 cents.
$\frac{5}{8}$ and 3-16 inch diameter, . . . . .	Advance 3 cents.

**Copper Bottoms, Pits and Flats.**—An advance of 2 cents per pound over the prices announced January 24 was made by the manufacturers under date February 2. The base price on Copper Bottoms, Pits and Flats is thus 25 $\frac{1}{2}$  cents, the extras being as follows:

14 ounces to square foot, and heavier, . . . . .	Base.
12 ounces and up to 14 ounces to square foot, . . . . .	Advance 1 cent.
10 ounces and up to 12 ounces, . . . . .	Advance 3 cents.
Lighter than 10 ounces, . . . . .	Advance 6 cents.

Circles less than 8 inches in diameter, 2 cents per pound additional.

Circles over 13 inches in diameter are not classed as Copper Bottoms.

Polished Copper Bottoms and Flats, 1 cent per pound extra.

**Seamless Brass Tubes.**—Under date February 6 a further advance of 2 cents per pound has been made in the price of Seamless Brass Tubes.

**Oilers.**—An advance of about 10 per cent. has been made in the price of Zinc Oilers, and an advance of about 25 per cent. in the price of Brass Oilers.

**Sheet Brass, Brass Wire, &c.**—In consequence of the continued and rapid rise in the price of Copper, Brass and Brass products are quoted at considerably higher prices than at our last report. The present quotations, which

are, however, liable to change, and are made by the manufacturers only for immediate acceptance, are as follows:

	Per cent. discount.
Sheet Brass, . . . . .	20
Brass Wire, . . . . .	20
Brass Rods, . . . . .	20
Brazed Brass Tubes, . . . . .	35
German Silver Wire, Rod and Sheet, . . . . .	45

**Pumps.**—The leading manufacturers of house and kindred Pumps are in session in Chicago as we go to press, arranging for a concerted advance on this line of goods. Pending action in the matter prices under date of February 1 have been quite generally withdrawn.

**Jack Chain.**—The market for Jack Chain, both Brass and Iron, is very firm, and a material advance has been made in the price of the Brass Chain. The present prices are represented by the following discounts:

	Per cent. discount.
Jack Chain, Iron, . . . . .	70 and 10
Jack Chain, Brass, . . . . .	60

**Glass.**—The American Glass Company have announced a 5 per cent. advance in the East, to take effect immediately, and a rebate of 25 per cent. on double strength and 15 per cent. on single strength Glass for orders placed during the present month, all specifications to be in by February 23. The rebate inducement for early purchases is a similar arrangement to the one inaugurated by the combine in January to reduce accumulated stocks at factory, and applies to the larger trade, each concern being allowed to purchase only such a quantity of Glass as was arbitrarily decided upon by the American Glass Company. It was not considered that the independent factories were injured to any great extent by the January rebate inducement, though it is understood that some of the jobbing concerns who furnished capital to run these factories felt that they were entitled to a rebate similar to that given by the combine. Eastern jobbers have made no change in prices and are quoting 85 and 5 per cent. discount for small lots of Glass, and 85 and 10 per cent. discount for carload lots. Manufacturers' quotations are now as follows:

Districts.	A.	B.	C.	D.	E.
5000 boxes or more, . . . . .	85 & 10	85 & 10			85 & 10
Carloads, . . . . .	85	85	85 & 5 & 2 $\frac{1}{4}$		85
3000 boxes or more, . . . . .	85 & 5	85 & 5			85 & 5 & 2 $\frac{1}{4}$
1000 boxes or more, . . . . .			85 & 10 & 2 $\frac{1}{4}$		

These prices are subject to freight allowance.

**Paris Green.**—During the past two weeks the Paris Green market has become stronger and an advance of  $\frac{1}{2}$  cent in price has taken place. The market is represented by the following quotations, which are 30-day net prices:

Arsenic kegs or casks, . . . . .	Cents per pound	12
Kegs of 100 to 175 pounds, . . . . .	" " "	12 $\frac{1}{2}$
Kits of 14, 28 and 56 " . . . . .	" " "	13 $\frac{1}{2}$
Paper boxes, 2 to 5 " . . . . .	" " "	13 $\frac{1}{2}$
" " 1 pound, . . . . .	" " "	14
" " $\frac{1}{2}$ " . . . . .	" " "	15
" " $\frac{3}{4}$ " . . . . .	" " "	16



## The Wisconsin Retail Hardware Association.

THE third annual convention of the Wisconsin Retail Hardware Association was held in Milwaukee last week. The first session was held on Wednesday afternoon, the 1st inst. The attendance exceeded that at any previous convention, the hall, which was quite commodious, being almost completely filled.

The association has grown during the year, and now numbers about 215 members, of whom considerably over half were present at this convention, besides a large number of traveling salesmen, manufacturers' representatives and jobbers. A feature of the convention was the appearance of a delegation of members of the

### Chicago Retail Hardware Dealers' Association,

whose names are given elsewhere. Marked enthusiasm was manifested during the sessions of the convention, as is always the case when an association is vigorously growing and making satisfactory progress in its objects and aims.

Officers of the association for the past year were as follows: President, John Hughes, Fond du Lac; vice-president, A. Noll, Chilton; secretary, C. A. Peck, Berlin; treasurer, W. H. Hay, Oshkosh; other members of the Executive Committee, C. E. Dewey, Kenosha; D. W. Ramsey, Madison, and A. H. Sheldon, Janesville.

President Hughes ably guided the deliberations of the convention until the election of his successor, while Secretary Peck filled his accustomed place with the manner of a man naturally fitted for the situation, dispatching the business with remarkable facility and readiness.

### WEDNESDAY AFTERNOON.

The convention was rapped to order by the president and the secretary called the roll of membership, as follows:

Anderson & Fritz, Racine.  
G. W. Adams, Juneau.  
D. B. Bailey, Appleton.  
E. Bergman, Washburn.  
Biehl & Woolenberg, Beaver Dam.  
F. C. Burr & Sons, Milwaukee.  
J. Boehm, Milwaukee.  
Fred. A. Baker, Evansville.  
Barlow & Seelig, Ripon.  
G. H. Bruns, Lake Mills.  
Frank Bauman, Racine.  
Bryce & Ferguson, Waupun.  
Clark & Lemon, Rhinelander.  
John P. Coffey, Whitewater.  
Centralia Hardware Company, Centralia.  
H. P. Chase & Co., Marinette.  
W. D. Cook, Green Bay.  
Collins & Son, Gratiot.  
J. M. Duecker & Co., Kiel.  
C. A. Dewey, Kenosha.  
E. H. Daniels & Co., Milwaukee.  
J. S. Druse, Milwaukee.  
J. Drokemp & Sons, Milwaukee.  
Dehne Bros., Neosho.  
Louis Deltz, Horicon.  
Fred Dittman, La Crosse.  
Wm. C. Delong, West Superior.  
Geo. P. Dana, Fond du Lac.  
Jasper Dexter, South Wayne.  
Dixon, Malone & Co., Racine.  
J. W. Dukersheim, Mazomanie.  
J. A. Dunstan, Hollandale.  
Day-Lindsay Hardware Company, Omro.  
Wm. Frankfurth Hardware Company, Milwaukee.  
Findlesen Bros., Green Bay.  
R. W. French & Son, Ashland.  
F. M. & M. M. Finch, Whitewater.  
T. H. Goodhue, Whitewater.  
H. R. Fehland & Co., Merrill.  
Peter Fellar, Kaukauna.  
Fredricks Hardware Company, Beloit.  
Otto Gallum, Milwaukee.  
Greve Bros., Kiel.  
Gross & Jacobs, Stevens Point.  
Emil Garnich, Ashland.  
Gaspar & Lyons, Waukesha.  
F. Geele Hardware Company, Sheboygan.  
Gaffron & Trowbridge, Plymouth.  
J. L. Gassette, Belleville.  
A. Galpin & Sons, Appleton.  
Hay Hardware Company, Oshkosh.  
Arthur Heins, Elkhart Lake.  
J. F. Hauenstein, Sheboygan Falls.  
C. A. Hartel, Waukesha.  
John Hughes, Fond du Lac.  
J. D. Hayden, Sun Prairie.  
Geo. N. Hess, Hartford.  
C. H. Hoton, Camp Douglass.  
J. S. Hay, Sturgeon Bay.

Hoenig Bros. & Co., Chippewa Falls.  
Hall, Linden & Co., Hayward.  
M. F. Howell, Sparta.  
Hessell & Lykum, Antigo.  
John Haensgen, Fond du Lac.  
C. F. Hansen, Markesan.  
Hager Bros., Fort Atkinson.  
Fred. Hernbrook, Milwaukee.  
Hoernel Hardware Company, Racine.  
Haas & Merbach, South Kaukauna.  
Howard Bros., Waupun.  
J. J. Hauert, Appleton.  
Calvin Hull, Milton Junction.  
Illian Bros., Milwaukee.  
J. Kornelly, Milwaukee.  
H. M. Krogman, Milwaukee.  
Jenkinson & Fay, Ripon.  
D. G. James, Richland Center.  
C. Jorgensen, Racine.

Chas. Janich, Waterloo.  
Max Janich, Waupun.  
Chas. Kroenig, Chilton.  
John J. Koepsell, Sheboygan.  
C. Krembs & Bro., Stevens Point.  
Krippene Hardware Company, Oshkosh.  
W. Krueger Company, Neenah.  
A. Kimball, Green Bay.  
Julius Krueger, Columbus.  
Alfred G. Kroncke, Madison.  
Krehl & Beck, Madison.  
D. & F. Kusel, Watertown.  
Adam Kroner, La Crosse.  
Koch & Rank, Brillion.  
Carroll Lucas, Menominee.  
Leach Hardware Company, Oshkosh.  
C. W. Lehman & Bro., Cedarburg.  
Wm. Lindsay, Milwaukee.  
J. C. Lewis Company, Antigo.  
O. F. Lender, Plymouth.  
Lee, Pratt & English, Baraboo.  
G. A. Loescher, Menasha.  
L. N. Larson, Burlington.  
Lohleburg Hardware Company, Oconomowoc.  
E. McGraw, Peshtigo.  
W. H. Munn, Milwaukee.  
H. H. Millar, Sheboygan.  
Malschalk & Weiss, Milwaukee.  
Jas. Montgomery, Wausau.  
Murphy & Kersten, Racine.  
Mariott Bros., Baraboo.  
F. A. McKillop, Arlington.  
Menzel & Kemps, Oshkosh.  
Jacob Mohr, Racine.  
W. B. Millar, Stockbridge.  
W. J. Millar & Sons, Genoa Junction.  
R. C. Murdoch, Broadhead.  
Miller & Staats, Sun Prairie.  
F. W. Marcessen, Platteville.  
H. L. McNamara, Janesville.  
Marshfield Hardware Company, Marshfield.  
F. W. Mattheus, New Holstein.  
A. Noll, Chilton.  
Oestrich Bros., New London.  
C. A. Peck, Berlin.  
G. G. Pratsch, Depere.  
L. Peterson Hardware Company, Appleton.  
Petermen & Koss, Appleton.  
S. A. Perkins, Waukesha.  
H. H. Porter, Waterloo.  
Roblee & Thompson, Fond du Lac.  
F. Rassmun, Beaver Dam.  
D. W. Ramsay, Madison.  
G. H. Rosenberg, Beloit.  
Romer Hardware Company, Manitowoc.  
C. B. Root & Co., Omro.  
C. H. Resimius, Rib Lake.  
Redeker & English, Kenosha.  
A. D. Race, Depere.  
Rather & Schauble, Wrightstown.  
Wm. Rathsaack & Sons, Manitowoc.  
E. H. Ramm, New London.  
A. H. Sheldon & Co., Janesville.  
A. Siefert, Adell.  
Chas. Schlei, Brillion.  
Chas. C. Stadt, Milwaukee.

H. F. Schleigilmilch, Eau Claire.  
 C. E. Simpson, Sparta.  
 Siefert Bros., Reedsburg.  
 Stevesen & Studeman, Madison.  
 Schlaffer Hardware Company, Appleton.  
 Strobal & Baumgarten, Neenah.  
 Superior Hardware Company, West Superior.  
 R. H. Suettinger, Two Rivers.  
 Mrs. S. M. Schultz, Medford.  
 John Sturner, Lowell.  
 A. Schupinsky, Milwaukee.  
 Chas. Schoessow, Milwaukee.  
 H. Salentine & Co., Milwaukee.  
 J. D. Trentlage, Milwaukee.  
 Sumner & Morris, Madison.  
 C. S. Sherwin, Marshfield.  
 Secker & Schrader, Lake Mills.  
 H. B. Simcox & Bro., Marinette.  
 Smith & Meadows, Oconomowoc.  
 Scofield & Co., Sturgeon Bay.  
 Wm. H. Spangers, Sheboygan.  
 Aug. Thielky, Mayville.  
 Emil Tietgen, Manitowoc.  
 Thomas & Cunningham, Berlin.  
 B. Undgrodt, Washburn.  
 Uttermark Bros., Weyauwega.  
 Worel & Zeman, Manitowoc.  
 Wencke & Schmidt, Manitowoc.  
 J. Walschlager & Sons, Manitowoc.  
 J. F. Wegner & Co., Fond du Lac.  
 H. W. Winter & Sons, Clintonville.  
 W. Wilkie & Son, Fond du Lac.  
 H. W. Williams & Co., Waupaca.  
 E. C. Williams, Waupaca.  
 Watson Bros. & Hitchcock, Marinette.  
 Weiss Hardare Company, Merrill.  
 Wm. Wedde, Campbellsport.  
 C. B. Wagner, Burlington.  
 Ole Wigdale, Fort Atkinson.  
 O. J. Williams, Cambria.  
 The E. Wagner Company, Manitowoc.  
 Wm. Webber, Watertown.  
 F. Wille Company, Oshkosh.  
 J. E. Wells & Bro., Portage.  
 Watson & Andree, Beloit.  
 Wenzel & Duteau, Merrill.  
 Zelle & Trilling, Sheboygan.

#### New Members.

The following dealers joined the association during the convention:

H. E. Frisbee, Pine River.  
 H. Raymond, Racine.  
 H. F. Prenzlów, Johnson Creek.  
 A. Arpo & Bro., New Holstein.  
 E. J. Schenkelberger, Sheboygan Falls.  
 Dott & Peshak, Iron River.  
 C. F. Pleper, Columbus.  
 Chas. Kuebler, Viroqua.  
 Stallenberck Bros., Milwaukee.  
 C. F. Bullwinkle, Jefferson.  
 L. L. Doud, Pittsville.  
 G. B. Lahr, Juda.  
 J. B. Welsnek, Plymouth.  
 Fesenfeldt & Hughes, Blue Earth.  
 A. E. Anderson, Stoughton.  
 F. S. Symonds, Pleasant Prairie.  
 Vose & Kroenig, Milwaukee.

#### Address of President Hughes

President Hughes addressed the convention as follows:

I am glad to be able to report that the affairs of the association are prosperous, our number is increasing and our influence is advancing. Our policy so far has been conservative, careful of the rights of others, but guarding our own. As we proceed with the business of the association we will learn many things of which we are now in the dark.

#### RIGHTS AND PRIVILEGES.

Our rights will become more clear and our future policy will be better defined as we proceed. It is wise to be careful in our course, demanding nothing but what is clearly our right, and granting all others their privilege to do business in any lawful, honest way. While granting this privilege to others, we claim the right and privilege, and it is our duty, to buy from our friends, and our friends only.

It is our right and our duty not to deal with those manufacturers who sell goods to our competitors, to

offer them below cost as baits for more business in other lines.

It is our right and our duty not to deal with those jobbers who sell goods at retail at jobbing prices, as well as those who pretend to job, but sell at retail prices. For the maintenance of these rights we are here associated.

#### NATIONAL RETAIL ASSOCIATION.

We find we have a National Association of Manufacturers jealous of guarding their interests. We find we have a National Association of Hardware Dealers confined to jobbers. We have a National Association of Bankers, willing to lend us money with good security and at a good per cent. of interest, and others.

Where does the retailer come in, without whom the rest are of no use?

Where does the consumer come in, unless the retailer be present and heard from, to guard his interest as well as our own?

We may have town, county and State associations, but we will never become a power in the land until we have a strong NATIONAL RETAILERS' HARDWARE ASSOCIATION, and this matter, I understand, is to be considered at our present convention.

#### Secretary Peck's Report.

Secretary Peck read his annual report, as follows:

In presenting my report to the third annual convention I desire right at the beginning to thank the trade of the State for their uniform courtesy and kindness to me in all the dealings I have had during the year with them.

In reviewing the work of the past year I feel that we have very much to encourage and very little to discourage us. We have not accomplished all that we could desire, but more than some of us expected we would, and not as much, possibly, as some of us expected we would.

#### MUCH YET UNDONE.

There is enough left yet undone to stimulate every member to do his share, and if such be the case, we may report still greater improvement in the year to come. I still believe that there is no one thing that can increase our membership as fast as to have the hearty co-operation of the

#### TRAVELING SALESMEN.

for, although they have other fish to fry, yet, if they would do a little missionary work in every town they visit it would not be long before our membership would be materially increased. I have an example of that with Mr. Plischke of the Frankfurth Hardware Company, who sent in three names October 27 and followed it up with two more last week. I firmly believe that every member we have could, with very little effort, add one to our membership from his vicinity within the next 30 days if there was enough depending on it to properly rouse him to work. Minnesota has found that it paid to have a secretary who could devote time to a personal canvass for this specific object, as well as talking up association matters to the trade at large.

#### TWO MEETINGS A YEAR.

I believe that we should hold at least two meetings a year, as the interim is so long with only one meeting each year that the interests of the association suffer, and if a midsummer meeting could be held at some central point it would, I think, awaken an interest in that section that would result beneficially to us, for many dealers would attend such a meeting who do not feel they can come down to Milwaukee in the winter.

#### THE MINNESOTA ASSOCIATION.

Soon after our adjournment a year ago I attended the annual meeting of the Minnesota Association, at Minneapolis, and was pleased to see the interest taken by the trade in the association, the unanimity that prevailed and the universal determination to push ahead and make things move. While their annual dues are very much more than ours, I saw no disposition to weaken, but all seemed determined to go forward. The



## NORTHWESTERN ASSOCIATION.

was formed at that time, the Executive Committee of which was made up of one from each of the three States represented—Minnesota, North Dakota and Wisconsin. A representative of the South Dakota Association was also present and assured us that as soon as practicable they would like to come into the fold, and since that time Iowa has formed a State association and will undoubtedly be glad to form one of our number. I have had some correspondence with parties in the East as to the advisability of forming a national association, but that seems at present to be far in the future. The next meeting of the Northwestern Association is to be held in St. Paul, February 7, which is the day preceding the meeting of the Minnesota Association.

## WORK OF THE YEAR.

The actual work of your secretary the past year is not as much as it should have been nor as much as I hope it may be by my successor. During February and March I wrote some 160 letters to recover the two-thirds return fare of our members, which was made necessary from the fact that less than 100 members presented receipts for full fare paid on the trip in, and one road especially was disposed to be arbitrary about the matter of refunding, but finally consented to my refunding to the patrons of their road, after which they returned the amount to me in lump.

During February I mailed 160 lists and duns to 48 delinquents, and also selected one dealer in each of the 63 counties of the State to act as solicitor, but that seemed to be pretty nearly a signal failure, as I think I have heard from only three of the 63.

## A MISSIONARY TRIP.

April 12 I started on a little missionary tour, and in two days visited six towns, in which we had a membership of nine among the 28 dealers, and I secured 11 new members, coming home feeling very much encouraged in regard to my ability as a first-class traveler. If I had quit right there I probably never should have changed my mind, but about the middle of May, happening to be in Milwaukee, I concluded to go down through Waukesha, Burlington, Beloit, Janesville, Elkhorn, Jefferson, &c., and on that trip visited 30 dealers, but only added six to the seven members we already had in those 11 towns; but of one thing I was certain, and that was that the trade of those towns then knew a good deal more about our association than they did before my visit, and am satisfied in my own mind that it paid, although several with whom I talked, who did not give me their names, said they would think it over and let me know, and are still thinking it over. The almost uniform courtesy with which I was received did much to take off the edge of my disappointment in not securing more members.

In several cases during the year I have been asked to furnish names and post office address of our members, to which I have replied in October in order that the membership might know we were not dead. The Executive Committee approved a circular letter of which I issued and mailed 185. October 20 I found there were 21 members still in arrears for the current year's dues and mailed them statements, to which I received remittances in ten cases, leaving only 11 now in arrears.

## A GRATIFYING MEMBERSHIP.

Our membership is to-day 190, which comes, I believe, within one of what I set my heart on having a year ago; and while they do not include all the live dealers of the State, they do include that number who, almost without exception, are up to date in nearly all that pertains to retailing Hardware, and their faces are set in the right direction to come into possession of the rest of it.

## SUCCESS.

The success of this association does not depend as much upon the officary as it does upon its membership and the faithfulness with which they try to carry out the objects and aims of the association. I trust that every

member consults his little "pink book" often and is largely influenced by it, for that is what we are here for. If anything, although I would not belittle the social feature of our work. The frequent change sheets which have been issued show that manufacturers and jobbers have found out that we exist and that we are tolerably lively, too, and the end is not yet.

## COMPLAINTS ABOUT JOBBERS.

I have received several complaints from members of jobbers who were not sufficiently careful in regard to selling parties who would be objectionable to the association, but am happy to say that, without a single exception, wherever complaint has been made I have found the parties complained of ready and willing to try and conform to our wishes, and I might also add that in one or two cases I have had complaints that I thought were not justly made.

## TRADE PAPERS.

I would be glad to know that every member takes a trade paper of some kind, not only for the good he can get out of it himself but also because it makes a very convenient means of communication between the officary and its membership, as I have always found several of them ready and willing to print all matter I saw fit to send them.

## PROCURING IDEAS.

Once the past summer, when out among the trade, I found a much better way of getting one's ideas than asking him to write a paper for the meeting, and that was to rub the hair crossways a little and by getting a general conversation started; before you are done you will have ideas that are worth money to you, and I hope an open discussion here will fill in the interim between the few papers we have promised. I was astonished to find members who solemnly told me they could not prepare a paper who were good double handed talkers, and right to the point, too.

The 14th of last month I mailed 500 invitations to the trade of the State, calling attention to this meeting and asking their attendance, and I think that hereafter I would only mail matter of interest to the membership, as those who have not responded up to this time during our two years' existence certainly indicate a lack of interest in our objects and aims.

## ELECTION BY BALLOT.

I would suggest the election of officers by ballot instead of by a nominating committee, as being more sure of getting a clear expression of the membership, for while it may take quite a little more time, we do not meet often enough, so but that we can do well what we do do.

So far as I know, we have lost but one member by death, J. S. Hay of Sturgeon Bay, who died last September.

Again thanking the trade for their uniform kindness in all my work during the year just closed, and with an earnest wish that such action may be taken at our present session as shall materially advance us in influence and numerically.

## Treasurer's Statement.

The treasurer presented a financial statement, which showed that the receipts during the year from all sources had been \$388.59 and the disbursements \$212.57, leaving a balance on hand of \$176.02.

## Committees.

An Auditing Committee was appointed, consisting of G. W. Adams, Juneau; Jacob Mohr, Racine, and A. Noll, Chilton; Committee on Transportation, Geo. P. Dana, Fond du Lac; Committee on Resolutions, D. G. James, Richland Centre; Jas. Montgomery, Wausau, and A. H. Sheldon, Janesville; Committee on Printing, C. A. Peck, Berlin; Otto Heins, Elkhart Lake; J. A. Wilkie, Fond du Lac; Committee on Grievances, Otto Schlafer, Appleton; A. D. Race, DePere, and W. H. Hay, Oshkosh.

### The Chicago Association.

President D. McLaughlin of the Chicago Association, being called upon for some remarks, said he hoped that within a year from to-day they would all meet in Chicago with a national Hardware association.

Ex-President T. H. Krueger of the same delegation spoke of the success which the Chicago Association had proved in securing harmony among dealers, also that they had learned how to buy goods better, had shortened their hours of opening, and further than that had been able to close their stores on Sunday, which had proved a serious matter until they had been able to take combined action on this question.

Secretary Goettsche of the same organization thanked the Wisconsin merchants for their warm reception, and said that the Chicago delegation would be glad to participate in the discussion and give some of their experience.

The Chicago Association now has 100 members, all located in the city of Chicago, and they feel extremely independent because they had found themselves able to accomplish so much that had been of great benefit.

### The American Steel & Wire Company.

A. Noll said that he had a very important matter to lay before the convention, as the result of some recent correspondence, proceeding to read a letter from the American Steel & Wire Company, Chicago, which stated that as soon as a few contracts ran out, which had been made by some of the companies prior to their purchase by the American Company, they would decline to take any more orders for any of their products from catalogue houses or department stores, but would confine their business strictly to the regular channels of the Hardware trade.

### A National Association.

President Hughes stated that a committee of six, consisting of three from Chicago and three from the Wisconsin Association, would be appointed to decide upon the best method of procedure to secure the formation of a national retail Hardware association. He appointed T. H. Krueger, E. Goettsche and D. McLaughlin of Chicago and himself, August Thielkye and C. B. Wagner of Wisconsin. The committee subsequently met, but decided that it would probably be better to defer action until definite instructions were given by some of the State associations.

### Manufacturers and Catalogue Houses.

N. A. Gladding, secretary E. C. Atkins & Co., Saw manufacturers, Indianapolis, Ind., being called upon for remarks, stated that his company had taken a decided stand in regard to selling to department stores and catalogue houses. The company will not sell to such places under any circumstances. They are satisfied with the business they can get from the legitimate Hardware trade, and have no sympathy with irregular selling of Hardware.

John J. Sinzich, Chicago representative of Geo. H. Simpson & Co., manufacturers of Saws and Tools, Lawburg, Ind., said that his firm had been solicited by catalogue houses, but had refused to have any transactions with them, and did not propose to do so.

A letter was read from the secretary of the Minnesota Hardware Association, extending good will to the Wisconsin Association and expressing the hope of a very full meeting.

Noll read the following paper on

### Selling to Legitimate Trade.

At last meeting a year ago I had the honor to read a paper to the members of our association, in which I tried to demonstrate how necessary it was for the legitimate Hardware dealer of the State to join us. It was of the greatest importance to persuade the manufacturers of Hardware to work in harmony with the retailer and not to discriminate against us in the general and department stores.

In last week's *Artisan* I noticed an article from a Nebraska merchant entitled "An Injustice of Stove Manufacturers."

I think our secretary should mail a copy of our constitution and by-laws to this gentleman and he would find at once a true picture of his own ideas, and probably induce him to organize the State of Nebraska.

### WILL NOT MANUFACTURERS HELP?

We have a National Stove Manufacturers' Association. Can they not, or will they not assist us in our laudable enterprise? Will there not be as many Stoves sold, &c.? Or, would it be possible that a person who is ready to buy a Stove would not buy it because the department store does not handle them?

Are the 25,000 to 30,000 Hardware dealers of these United States not capable of selling, blackening and setting up all the Stoves needed?

The same thing is true and can be said of the American Steel & Wire Company, the Granite and Tinware combine, and others.

Is it not due time for these gentlemen who control the sale in their respective lines to enact a new and just law in announcing to the world that hereafter they will sell their Stoves, Nails, Wire, Granite and Tinware to the legitimate Hardware dealer only? We on the other hand will guarantee them that they will sell just as many goods the year round. These gentlemen have our, as well as their own, future welfare in their hands, and I believe that through their assistance only we can gain our points. Therefore, let us apply to them at once, this day, for their assistance.

### BUY ONLY FROM OUR FRIENDS.

Let us in return assure them of our assistance and pledge ourselves not to buy from any manufacturer or jobber who upholds the general and department stores.

The most of us can improve a good deal yet in this direction. If you pick up a daily paper and find in there an advertisement of a department store advertising a certain brand of Stoves which you handle, notify your secretary at once, and start to close out that line of Stoves, and in the future buy your Stoves of such firms as are loyal to our association. I can give you the names of such manufacturers if you want to know them. Thank God we have such firms who refuse to sell at any price to such illegitimate trade.

We should not be called boycotters, as some papers have tried to place us, for it is a just and righteous cause that we are advocating, and if successful cannot help but improve the whole business and laboring interests of the country.

### EXHAUST DIPLOMACY FIRST.

Now, once more, let us ask the manufacturers to assist us in carrying out our objects and do not let us declare war to any of them until all diplomatic efforts have been exhausted.

Should we not succeed in this direction, and war would be unavoidable, then let us stand true to our flag and motto: "Hardware for the Hardware Store," and I hope that this our flag will wave and be protected under the waves of the greatest of flags—the flag of our country, the Stars and Stripes.

After the reading of this paper some diversion was caused by individuals naming several Stove companies who absolutely refuse to sell to department stores, the claim in some cases being stoutly controverted by other members of the association who said they knew better. It proved that the naming of companies was sometimes a matter that had better be left undone.

### Exorbitant Express Charges.

President Hughes read a letter received from *The Iron Age* regarding the matter of exorbitant charges made by the express companies, asking the association to take some action upon this important subject. A motion was adopted for the appointment of a committee of three to prepare a suitable resolution. The president appointed



H. F. Schleigilmilch, Eau Claire; E. Goettsche, Chicago, and himself.

#### **Selling Consumers.**

Otto Schlafer of Appleton hoped that manufacturers would go further than simply refusing to sell to catalogue houses and department stores and would also refuse to sell to consumers. Hardware merchants are annoyed constantly by both manufacturers and jobbers selling to their customers.

#### **Lien Law.**

H. Raymond of Racine called attention to a movement in the Legislature to amend the lien law. He said that Wisconsin now has a good lien law and that Hardware merchants should personally see their representatives and try to prevent any change. This caused some discussion, but the position taken by Mr. Raymond was sustained.

#### **Buying Together.**

E. Goettsche of Chicago asked the question what the Wisconsin association was doing of practical value for its members. He said that the strong point of the Chicago association was in buying together. Some of the members got prices of goods which were very low and gave them to the other members for their benefit. This was the start. The buying committee was soon afterward appointed, which had been an excellent feature.

The members of the association not only buy together, thus getting very close figures on a larger quantity than if buying separately, but afterward arrange to sell the articles thus bought at a uniform but reasonable price which would afford them a satisfactory profit. They also cultivate the social side, having frequent social gatherings.

#### **Local Associations.**

He was followed by several Wisconsin members, who discussed the desirability of Hardware dealers having local associations and agreeing upon prices so as to avoid destructive competition. The experience of the Manitowoc merchants was given as an example of this kind. The members of that organization meet twice a month, and having a deposit from each member they can effectually carry out the purpose of their organization by inflicting a fine for breaking the rules, thus being able to immediately collect fines from the deposit.

#### **Insisting on a Profit.**

President Hughes was of the opinion that this end could be accomplished even without the formation of a local association by the merchants of a locality absolutely refusing to sell without securing a reasonable profit on their transactions. In his town the merchants have no association but are all animated by the same purpose in trying to get a fair return for their time and investment of capital and find that they have no trouble in maintaining remunerative prices.

#### **Smoker.**

Wednesday evening was passed by the members of the association in the enjoyment of a smoker at the famous Deutscher Club, the entertainment having been provided for them by the jobbers and Stove manufacturers of Milwaukee.

#### **THURSDAY MORNING.**

The Thursday morning session was opened by the secretary reading a letter from the Iowa Retail Hardware Association, which extended greetings to the Wisconsin association, and said that the Iowa dealers would go into their first annual convention at Des Moines this week with 149 members enrolled. A number of resolutions were received and referred to the Committee on Resolutions. The following paper was read by Louis Dietz of Horicon on

#### **Delivered Prices.**

As I understand that the object of our meetings is to advance the interest of the retail Hardware dealer, it appears to me that there is nothing that will advance our mutual interests more in this time of trusts and consoli-

dations than the receipt of delivered prices on all goods we handle, provided the shipment exceeds 100 pounds in weight. We all know that jobbers and manufacturers are in a better position to get the right freight rates than the retailers, because by shipping over different lines they cannot be forced to give a road their business (when there is a choice) that takes advantage of them by shipping to points having but one railroad accommodation.

From the time that I contracted for my first stock of Stoves the stove company volunteered to get the

#### **LOWEST OBTAINABLE FREIGHT RATE**

for me, stating that they could secure a lower rate than I could, which fact I was also soon convinced of, and up to the time that delivery was made I depended on the Stove manufacturer to secure this rate for me.

The same is true in the delivery of car lots of Wire and Nails, and if this is true on car lots it is certainly fully as applicable on local shipments, if attended to.

I do not believe that it would be imposing in the least on the jobbers and manufacturers (no more than to ask them to go to the trouble and expense of boxing goods), because in a great many instances the rates are lower on a 1000-mile run than to points on a 100-mile run. I have been told of 3-cent rates on 300-mile runs, and also of lower deliveries by boat and rail than by either alone, the distance being about equal.

A great many goods are made in the East and shipped to the Western, Southern, Northern and Middle States, and all of the jobbers and manufacturers I have had the pleasure of doing business with offer to make

#### **CHICAGO OR MILWAUKEE DELIVERY**

and a great many offer to lay the goods down at destination if we are not in present need of the stock. Selling into Western cities, delivery is made to competing cities, and, as nearly as I can learn, at about the same prices in all instances that we are asked to pay on Chicago and Milwaukee delivery.

If delivery of goods can be made outside of their territory, why can it not be made in their territory? Does it not seem plausible that if the jobbers and manufacturers were paying the freight to its destination, the percentage they would have to add to prices of goods would be less than one-half of rates given us, and, besides, we would at all times know exactly what the goods cost us laid down at the time of placing our orders.

If not imposing too much on your time, I will give a few examples of

#### **IMPOSING ON THE RETAILER.**

similar to that very likely experienced by a great many of the members present. In November, 1896, I bought a car of Wire on which I was guaranteed a 5-cent rate. When freight bill was presented it called for a 7½-cent rate. I protested about paying it, but, upon the promise of our local freight agent to have it investigated, I paid the full amount and waited for the rebate, which did not come.

Several months thereafter, in January, 1897, I bought a car of Nails of the same party of whom I had bought the Wire, and again was assured of a 5-cent rate. I then told him my experience with the 7½-cent rate, and that our freight agent had been unable to get a refund of the overcharge. He asked me to wait until the car of Nails arrived, and in case it again called for a 7½-cent rate, and I was unable to get the refund made from here, to forward both freight receipts to their house and they would make the collection of both. The second car took the 7½-cent rate, and our local agent did his utmost to collect the overcharge, but again failed to do so, and I forwarded both freight receipts to the jobbing house, who notified me inside of two weeks that the railroad company had

#### **REFUNDED \$12.85 OVERCHARGE**

and that the same had been placed to the credit of my account.

Some jobbers see the necessity of protecting the retailer on freight rates. Lindsay Bros. of this city, being

one of these firms who certainly are entitled to credit for their interest in this matter, having had notices on each invoice that I received of them during the past year, to the effect that if the

#### FREIGHT RATE EXCEEDS A CERTAIN RATE,

to forward the paid receipts to them and that they would collect the overcharge. The freight rate on each invoice of goods received has exceeded their specified rate in every instance, and in each case this overcharge has been collected by them and placed to my credit.

I believe that it is economy on our part to pay the extra expense (added to the price of goods) that a manufacturer or jobbing house is put to in obtaining the lowest freight rates, and selling their product at delivered prices, especially as it is at present, where fully

#### ONE-HALF OF THE GOODS WE BUY

are being sold on delivered terms, and at just as low prices as when we are asked to pay the freight. Where do we find the retailer in a town of any size who is not compelled to deliver the goods he sells free of charge?

I would be pleased to have the members of this association consider this matter, and express their opinions thereon. There is certainly more fairness in this demand than there was in asking for "No charge for boxing and cartage," if actual cost of same had been charged.

#### Election of Officers.

The election of officers was held with the following result: President, James Montgomery of Wausau; vice-president, A. H. Sheldon of Janesville; secretary, C. A. Peck of Berlin; treasurer, H. F. Schlegelmilch of Eau Claire. Executive Committee: D. G. James of Richland Centre; Jas. Kornelly of Milwaukee; Otto Heins of Elkhart Lake; Otto Schlafer of Appleton.

Immediately upon the election of president, Mr. Montgomery was escorted to the chair. He thanked the members for the honor conferred, not only for himself, but for the section of the State from which he came.

While the election was being conducted, the business of the association proceeded during the preparation of the ballots. The report of the Auditing Committee was made, approving the secretary and treasurer's reports.

E. F. Lawrence of Lawrence Bros., Sterling, Ill., was called on for some remarks, as well as Hon. John C. Koch of the John Pritzlaff Hardware Company, Milwaukee, and E. F. Lindsay of Lindsay Brothers, Milwaukee.

The convention adopted a resolution to make the salary of the secretary \$100 per year, and, combined with it a vote of thanks to Secretary Peck for his past services.

Mr. Noll urged that the proceedings should be printed in pamphlet form. His motion was adopted that a committee of one should be appointed to assist the secretary in getting up the pamphlet. The president appointed Mr. Noll on this committee.

A resolution was adopted that the members should hereafter sign their letters as members of the Wisconsin Retail Hardware Association.

The following paper was read by R. C. Murdock of Brodhead on

#### The Wisconsin Retail Hardware Association:—What It Is and What It May Be by 1905.

It was organized in February, 1897, for the purpose of protection from the inroads of manufacturer and jobber, and to bring about a better feeling between retail Hardware dealers and competitors.

We gathered together for the purpose of bringing about certain results, of which you are well aware. The success of this organization rests greatly with its members. Officers fail to accomplish much without the co-operation of its members. "Life is what we make it." The home is what we make it. All organizations are what we make them. We look back a few years and we see ourselves in infancy. We wondered what would become of us, who would look after, nourish and care for us, and say to us, be careful how you act, have an eye

on the company you keep, and look out for our environments, and, if necessary, rebuke us for breaking over the rules.

#### REACHING OUT.

We find ourselves picked up by trained nurses, Brothers Peck, Hughes and other officers. They take up the work, look after our wants and needs, while we are roaming along, living, perhaps, on the milk of their human kindness. We began to grow under their care, and in February, 1898, had 160 members on their hands. We begged them to continue in their good work, promising all the lost sheep we could find into the fold, and as we began to circle away from home, we find our guardians acting as forerunners for us, looking out for what company we might get into, so we were given playmates that we might gain ground in associating with others. In conversation we found our desires were mutual, our aims, likes and dislikes similar. These playmates for convenience we will call Minnesota and North Dakota. We are here reminded of the song, "We Are Getting a Big Boy Now."

We find in our associations that they have a tendency to

#### DRIVE OUT JEALOUSIES

and bring us into friendlier relations with each other. Competitors in trade should not be enemies, and nothing we know of will bring about friendship and brotherly love as well developed, harmonized, co-operative aggressive organization. We find during the past year a better feeling exists between Hardware dealers, more mutual relations exist between the retailer and manufacturer and jobber, except a few who are blacklisted. We hope for more mutual relations between jobber and retailer, and think and look for some arrangement to be made for meetings, two or three times a year, of committees from manufacturers, jobbers and retailers, discussing, formulating and executing plans whereby all matters of difference and dispute may be amicably and harmoniously settled.

We do not see how the retailer in small cities of from 2000 to 10,000 inhabitants can get along without the jobber, but as some one has said: "A well organized Hardware association is a valuable acquisition to the wholesale dealer." "Useless each without the other."

We have now 216 members. Another year ought to see our

#### MEMBERSHIP DOUBLED.

To do this each of us need only to get one member. One of the first desires of a Christian is to bring others to Christ, so we, if we think organization a good thing, should send in the name of at least one new member. Do a little missionary work when you see your brother Hardwareman accidentally—this always makes Brother Peck smile.

If this work is carried on earnestly, aggressively and fearlessly, and at the same time carefully, along these lines of personal work, we believe in 1902 we will see a

#### GREATER ORGANIZATION FORMED.

We will name it, as a matter of prophecy, Manufacturers', Jobbers' and Retailers' Co-operative Hardware Association.

It seems to me that we are sure eventually of just such an organization. To get this combination of interests and ideas the Wisconsin organization must grow. In order to grow, we must inject new life by adding in membership and by systematic, energetic warfare, until we reach the goal, and then in 1905 our association ought to have 90 per cent. of the dealers.

We then find the manufacturer and jobber saying to the solid front of retailers, We will protect you and thus protect ourselves; we want your support—and we find ourselves looking up with all possible assurance, saying, You have treated us right royally; give us your hand.

Thus we came. We organized. We succeeded.



**Resolutions.**

D. G. James, chairman of the Committee on Resolutions, reported the following to the convention, which were unanimously adopted:

*Resolved*, It is the sense of this convention that we endorse the action of the New York merchants looking to the reduction of the exorbitant express charges now being made by these companies, and we pledge them our loyal support along these lines.

*Resolved*, That a copy of this resolution be forwarded to the proper officers in New York by our secretary.

*Resolved*, That we suggest to our Executive Board the importance of connecting ourselves with a national organization, and recommend them to take steps along these lines as suggested by the Chicago delegation, whom it has been our pleasure to receive.

*Resolved*, That a Legislative Committee be appointed, composed of the Hardware merchants of Madison, to report to our secretary any bill or bills that may be introduced in the Legislature detrimental to the interests of the Hardware merchants of this State.

*Resolved*, That it should be the duty of each member of this association to furnish each other information in regard to the financial standing of their customers as they migrate from place to place.

*Resolved*, That our association tender a vote of thanks to the proprietors of the Republican House for courtesies shown in procuring this hall for our meeting without cost to the association.

*Resolved*, That this association extend a vote of thanks to the Ferrosteel Company of Chicago for their foresight and liberality in furnishing our members with such an artistic 1899 button for the association.

*Resolved*, That we extend a vote of thanks to the members of the press for the courtesy shown in reporting our meeting.

*Resolved*, That the members of this association have the fact fixed on their letter or note heads asserting they are members of this association.

*Resolved*, That we, the Wisconsin retail Hardware dealers, wish to assure the jobbers and Stove manufacturers of Milwaukee that we have fully appreciated the hospitality received at their hands, and as we go to our several homes we have a warm place in our hearts for them, and shall not feel sad if they make a small inroad into our tills the coming years.

*Whereas*, It has been contemplated by the railroads composing the Western Classification Committee to raise the minimum carload weights on agricultural implements and vehicles, and other classes of goods handled by the members of this association; therefore be it

*Resolved*, By this association, duly assembled, that we deplore such action on the part of the railroads, and deem it unwise and unjust, and will inflict a great hardship on the dealers throughout the State, and we earnestly request and urge upon the several railroads doing business in the State that they retain the former minimum rates, and that they instruct their representatives to oppose the changing of said classification.

*Resolved*, That a copy of this resolution be forwarded to the Western Classification Committee, and the general freight agents of the several railroads doing business in the State.

**THURSDAY AFTERNOON.**

The Thursday afternoon session was opened by the reading of an invitation from the jobbers and stove manufacturers of Milwaukee to attend the Alhambra Theatre in the evening. A motion was adopted for the purchase of a rubber stamp for each member of the association to stamp his stationery with the device, "Members of the Wisconsin Retail Hardware Association."

Mr. Hughes submitted a motion in favor of a summer meeting of the association, but it met with defeat.

Geo. W. Trout of Chicago extended a very pressing invitation to the association for them to hold their next

annual convention in Chicago, but it was not considered desirable to hold a meeting outside of the State.

C. E. Dewey, Kenosha, read the following paper on

**The Objects and Benefits of the Association.**

With your kind indulgence I will try and give you my views of a few of the objects and benefits of this association. About two years ago we received a card sent out by our friend, Mr. Noll, calling a meeting of the retail Hardware dealers of Wisconsin, which was responded to by about 40 merchants, and I dare say that they that did come came with the intention "just to see what the others would do." But as we became acquainted, we found that we were all looking for the same object—namely, an opportunity to better our condition.

At this meeting it was decided that our hope lay in the formation of an association. The proper steps were taken, and the Wisconsin Retail Hardware Association began its existence with this object in view, "to promote the interests of and secure the friendly co-operation of Hardware dealers."

A Constitution and By-Laws were adopted to guide us in advancing this association to the front rank of neighboring associations, and to assist us to continue it to a successful finish. This can not be done by any one individual, but by a

**COMBINED EFFORT**

of every Hardwareman in the State, and, I might add, the adjoining States.

It is not our intention to antagonize the people that do not think as we do, but we do want to impress on them in such a way that they will not forget that the retail Hardware business is to be run by the retail Hardware dealer, and the manufacturing and jobbing business by the manufacturer and the jobber.

It is our privilege to supply the consumer, not theirs. Some of our wholesale friends seem to think that they can run both the

**RETAIL AND WHOLESALE TRADE,**

and that we must keep still and say nothing. We do not think that way, and we are not going to keep still. We want them to understand that they are to stay on their side of the fence and not "play in our yard," as we can do that ourselves.

We do not want every store in the land to add a stock of goods of our line for the simple purpose of slaughter, and to help sell their merchandise. We do not want the druggist to sell Pocket Knives and Razors; the dry goods merchants to sell Scissors, Coal Hods, Tin Cups, &c., and I might continue these comparisons on down the line.

**HARDWARE BELONGS IN A HARDWARE STORE,**

not in any other place, and it is one of the objects of this association to keep it there and reduce the quantity that is being sold elsewhere.

This association can very wisely profit by the success the Plumbers' Association has attained. They work together as one individual. In towns that have water and sewer systems it is impossible even for a Hardware dealer to buy (only at retail) any of the heavy weights of lead pipe or other of their goods. You will also please notice that you do not find

**PLUMBING GOODS**

on 10 cent counters of department stores. They are only in the plumbing shop. They also go so far as to regulate the margin that the plumber shall derive from his goods, which I have been told is about 50 per cent. Why cannot the Hardware association keep this in mind, and as we grow stronger this might be brought about. If this could be accomplished the selling of Hardware, it seems to me, would be one continual round of pleasure. But perhaps I am looking too far into the future and had better come back to the present.

It is the aim of this association to improve. This I believe is greatly assisted by the numbers on the programme entitled, "Discussions." These discussions are

instructive and interesting, as they bring out our daily experiences from which a great many pointers are given that we can profit by. It is the desire of every member of the association that more topics be brought up at these times that they may be freely talked upon. It is from these

#### EXCHANGES OF IDEAS

that we acquire some of the direct benefits of this association. I do not believe that there is one of us, after hearing the numerous papers on "Credits," but has gone home with the full determination to say "No" with more firmness to Mr. Doubtful, when he asks for credit, and to "punch up" Mr. Slow Pay harder for a remittance. In my mind I do not think we can talk over the subject of credit too much. Credit is necessary, and will be with us as long as the world exists, but it can be curtailed if you make a persistent effort in that direction, and will not do any injustice to your customer, as "frequent settlements make fast friends," but long credits have made many enemies.

If from what we learn at these meetings the credit system is brought nearer to a

#### CASH BASIS

and each one of us is able to increase our cash receipts, you can mark it down that this association does not owe you one cent, but on the contrary has placed dollars in your pockets.

Before I close I beg to call your attention to one more feature which is not written in the little book whose teachings we are to follow, and that is the social talks and visits that take place before and after our regular sessions. What is more pleasant than a half hour in a quiet corner with some distantly located Hardwareman that we have heard of through the columns of our ably edited and accommodating trade papers, and from the always present missionary, the genial traveling salesman. This is a pleasure that cannot be forgotten, nor must we overlook the entertainment that has been furnished us by our Milwaukee friends, at our past meetings, the base ball games, theater parties and the barrels of—mineral water and other accompaniments which have been bestowed upon us. These help to brighten the way along which we are traveling, trying to learn how to better "sell Hardware to buy our daily bread and provide shoes and petticoats for our babies."

W. H. Hay of Oshkosh read the following paper on

#### Forty Years in the Hardware Business.

Standing behind the counter and selling the same line of goods for 40 years is an experience that does not come to every one, and, in fact, there is only one other case in our city, with its population of 30,000. I tell the boys in the store and the traveling salesmen that I ought to be retired with a pension.

In May, 1858,

#### GREEN FROM THE FARM.

I started in to learn the complicated Hardware business. The changes that have taken place, both in the manner of doing business and in the goods handled, are phenomenal. Perhaps in no other trade or business has the ever inventive Yankee brought about such remarkable and sweeping changes.

Most of the Hardware that passed over the counter of the Hardware merchant 40 years ago was of English and German make. We sold such articles as Wade & Butcher's Razors and Files, English Chain, Wostenholm's Farrier and Pocket Knives, English Butcher Knives and Peter Wright's Anvils and Halter Chains, all imported articles and articles that to-day are made by Americans at a greatly reduced price.

In thinking of the more every day articles in which there has been

#### A REMARKABLE CHANGE.

I might mention the common every day Screw. Forty years ago the only Screw that was in use was the one with a blunt point, and required a Bradawl or Gimlet to

start them. Then there were the Locks. They were mostly Rim, Janus faced, and were for the most part made in Pittsburgh. The common Knob in use at that time was the mineral or porcelain, but for the better class of houses Glass Knobs were the proper thing, and retailed at \$1.50. The Lock used for store doors, halls and schoolhouses was a large one on a board about 6 x 8, with two heavy brass keys, which required a weight in the opposite pocket.

The Door Hinges were mostly cast with fast joints, but later on the old style of reversible Butts, with rights and lefts, made their appearance.

Iron Cut Nails were the only ones in use at that time. They retailed at 5 cents per pound and 6 cents for 3d., and by the keg brought \$4.50 from 10d. to 60d., and 25 cents advance on each additional size down to 3d., with an advance of 50 cents for the 3d. Bar Iron sold at 5 cents, base, and Swedish Iron at 10 cents. American Cast Steel at 22 cents and English Steel at 30 cents per pound, and Manila Rope brought 18 cents per pound for the larger sizes.

#### STOVES.

The cooking Stoves which were used were the old fashioned Premium and elevated oven Stoves. The Premium Stoves with two griddle holes in front, then, going back, an elevation of about 6 inches and two griddle holes behind, and the oven was about 18 inches square. They were made by Vincent, Hinrod & Co. of Erie, Pa., and the elevated ovens were for the most part made by Jewett & Root, now Sherman S. Jewett & Co., of Buffalo, N. Y. The Premium Cooking Stove retailed at \$18 and \$20 with the trimmings. There was a great demand for Stoves in those early times, as the early settlers did not bring their Stoves with them, they being too heavy. The firm I was with sold 100 Premium Stoves in three weeks, giving a due bill for the trimmings.

During the years 1859 to 1860 the square Stove, Hathaway patent, came into use and completely revolutionized the business. They were a great improvement on the old style, and were the first Stoves to be introduced which threw the heat under the oven.

The Heating Stoves used in those early times were the old style box and the sizes ranged from 18 to 48 inches. Then, too, there was the air tight, self regulator, made with cast top and bottom, with linings of sheet iron and with genuine Russia iron on the outside. These Stoves retailed at from \$20 to \$25.

#### STOVE PIPE.

The Stove Pipe was all hand made from No. 24 sheet iron and sold at 12½ cents per pound or 37½ cents per joint. Common Square Elbows sold at 37½ cents and the genuine Russia at 75 cents; and the Pipe made of Russia iron retailed at 35 cents per pound.

As all of this ware, together with all the Tin and Copper Ware, was made by hand, there was naturally a great demand for tinsmiths, and they demanded from \$1 to \$1.50 per day.

Perhaps in nothing has there been

#### A GREATER CHANGE

than in Wash Boilers. They were all made by hand in those days—Copper Boilers. They sold for 62½ cents per pound, or about \$7.50 apiece. Harrow Teeth were made from ¾ and 1 inch square iron and sold for 10 cents per pound.

In those times the Hardware merchant did not carry Horseshoes or Horse Nails, as the blacksmiths made their own. But this made a great demand for Esopus Shoe Shape and U. B. Nail Rod.

#### LUMBERMEN'S SUPPLIES.

As lumbering was the chief occupation in this section of the country in those times, and from the way in which it was carried on—that is, by establishing a lumber camp in the woods and working from that center—it, of course, naturally follows that one of the chief resources of the Hardware merchant was the fitting out of these lumber camps. This made a great demand for the articles



needed in camp. The most important of these were Axes, Cross Cut Saws, Logging Chains, Ox Yokes, large Sheet Iron Heaters and the old fashioned Bake Ovens. Last, but not least, was the tin punched Lantern, used with a short piece of candle, and the fact still remains to be solved whether you could see better without than with it.

#### I WENT TO WORK

for Hay & Clark, successors to Hay & Hall, who founded the business in 1848. The name of Clark was written over Hall on a sheet iron swinging sign. This was done, no doubt, as a matter of economy.

For three or four years things ran along in the channels indicated above. Then came the Civil War, and the Hardware merchant who had weathered the storm realized a rich harvest. Prices went up "out of sight." The question was not so much a matter of price as it was an ability to furnish goods. The following are the prices that some of the more common articles brought during this period:

#### CIVIL WAR PRICES.

Bar Iron.....	10 to 12½ cents base.
Swedish Iron.....	20 cents.
Shoe Shape.....	15 cents.
Nail Rod.....	20 cents.
English Steel.....	40 cents.
Ames' Shovels, each.....	\$2.00
Plain Three-Tined Forks.....	1.25
Strapped Forks.....	1.50
Cut Nails, per pound.....	10 cents.
Leather Carpet Tacks, per paper.....	10 cents.

Everything in the Hardware line rose in proportion. Every one had plenty of money and the high prices were paid without flinching.

But after the war prices sank almost as rapidly as they had risen. But, notwithstanding this fact, business continued to be good.

#### BANNER YEARS.

I entered the Hardware firm of S. M. Hay & Bro. January 1, 1865, and from that date to 1875 these were the banner years in the Hardware business. If I could be assured the same business and margins of profit for another decade I would be content to retire without a pension. Although, as I have said, prices fell after the war, yet the prices of Hardware from 1865 to 1875 were somewhat different than at the present time. To give you an idea of the wholesale price of Hardware I take the following figures from an invoice book dated 1875:

Wire Cloth, per square foot.....	\$0.05
Mineral Knobs, per dozen.....	2.25
Porcelain Japanned Knobs, per dozen.....	3.60
Cut Iron Nails, base.....	3.25
Axes, per box.....	10.75
Clipper Scythes, per dozen.....	10.50
Refined Borax, per pound.....	15¼
Manila Rope, per pound.....	15

Shelf and Heavy Hardware followed the same trend and were equally high in proportion.

From 1875 to the present time the changes have been great and marvelous. I find it impossible in one paper to note these changes in detail. Looking at the period as a whole, I would say that

#### THE MOST NOTICEABLE CHANGE

has been in Builders' Hardware. Goods that were staple and salable a few years ago are now relegated to some remote corner and receive but slight attention when the annual inventory is taken. The latest fad is old copper and blast and oxidized silver, rustless iron, superseding the old standard No. 3 finish, and plain bronze.

Another noticeable introduction is the Steel Range, with four and six holes and with two plates of steel, lined with asbestos. And we must not forget the High Art self feed, with duplex grate and a profusion of nickel plate. This and the improved surface burners seem to be the favorites to-day.

I presume it is safe to say that seven-eighths of the Shelf Hardware, Stoves and Belting, both rubber and leather,

#### ARE MADE IN THIS COUNTRY.

The articles of importation that we now carry in stock are Peter Wright's Anvils, Halter Chains and Cow Ties,

Carpenters' Pincers, Wostenholm's Farrier Knives, Wilson's Butcher Knives, German Pocket Knives and some English and German Razors. The balance of trade for the year 1898 was over \$600,000,000 in our favor. We lead the world on passenger and freight cars, Bicycles and Bicycle Parts, all scientific apparatus, Typewriters, Sewing Machines, and, I think, fine Table Cutlery and Carving Sets. We also export large quantities of Sole Leather. The year 1898 we exported over \$3,000,000 worth of Bicycle and Cycle Parts to the different countries of the world; Sewing Machines over \$3,000,000 worth.

I think the Hardwareman of the near future will live to see everything in the line, both Heavy and Shelf Hardware, manufactured in this country. The crude rubber for the manufacture of Belting and Hose, Manila Hemp that is now used in the manufacture of Rope and Cordage, will have to be imported.

Astonishing as are the changes that are apparent in the Hardware business itself, they are not more so than are the changes in the

#### MANNER OF CONDUCTING BUSINESS.

In the days of the ancient history of this State merchants went to market twice a year and bought a six months' stock. They went from our city by team or horseback to Sheboygan, and there took the steamer for Cleveland or Buffalo. Here they bought their stock and shipped it by steamer to Sheboygan, and from there with team to their place of destination.

#### TERMS.

The terms on Hardware and Stoves at that time were six months without interest and 6 per cent. for six months longer, and if payments were made prior to the six months interest would be allowed thereon at the rate of 6 per cent. per annum.

Money commanded 18 per cent. at the banks and money brokers could easily get 2 per cent. per month. This undoubtedly seems strange to the Hardwareman of to-day, with the fluctuating market and the intense competition.

The traveling salesman, who is so much in evidence nowadays, was at that time an unknown quantity, and that possibly was one reason why the jobbers could give such liberal terms.

Our advancing civilization, with its

#### CUT-THROAT COMPETITION,

has made it necessary for both jobbers and retail merchants to change their modes of doing business. For it is only the progressive Hardware merchant and the hustler who are at all "in it" these times.

And now we have got down to modern times. I have tried, in the short time allowed me, to give you, not in detail, but rather a general idea of the Hardware business in Wisconsin during the last 40 years. But every history must have its moral. When the jobbers and manufacturers who directly derive their living from us, and whose customers we are, violate every principle known to the business world, and

#### WILLFULLY AND MALICIOUSLY

go to our customers and sell them their goods at a price equally as low as they sell to us, it is time another chapter was added to the history of Hardwaremen in Wisconsin. It is time that the Hardware merchants league themselves together and say in words of no uncertain import to the jobbers and manufacturers: "Either restrict your business to the lawful and well recognized channels of your trade, and recognize the well established principles known to all business men, or else keep your traveling salesmen and your goods out of our stores."

Gentlemen of the Wisconsin Hardware Association, I wish, in closing, to congratulate you on having such a large number present of the representative Hardwaremen of the State. I think that at our third annual meeting we have every reason for encouragement. As Brother Peck, our worthy secretary, has said, we have not ac-

complished everything, but we have certainly made progress in the right direction. The manufacturers have found out that the Hardware trade, united and working along the same lines, is a power in the State. The jobbers, when they have one or more customers in a place, are not quite so free to sell goods at wholesale prices to the customer of the retailer.

#### THE SOCIAL FEATURE.

And then, gentlemen, apart from the business part of the meetings, to my mind the social part is worth the annual dues and the traveling expenses. We meet and learn from each other the different ways of doing business. Every man needs a little recreation and outing at least once a year, and we go back to our counters and desks feeling refreshed and better able to fight the battles from day to day.

#### Mr. Wigdale's Remarks.

Ole Wigdale, Ft Atkinson, who has been in business since 1855, was called upon to give some of his early experience. He came to this country when but 18 years of age, wholly unable to speak English, and learned the tinning business in Beloit. After trying several localities, he settled at Cambridge and resided there from 1857 to 1867, at which time he removed to Ft. Atkinson and has resided there since. He gave some interesting statements about the difficulties of doing business with the wildcat currency in circulation before the war, and his reminiscences were greatly enjoyed by the members.

H. Raymond, Racine, made a humorous speech on the foolishness of many merchants in transacting business without endeavoring to secure reasonable profits, and said that an organization was in existence which he denominated I. O. of D. F., which is easily interpreted.

John Hessel, Antigo, read the following paper:

#### How to Compete with the Department Store.

A year ago to-day I had the pleasure of attending a meeting of this association. I listened with keen interest to the many able papers and to the remarks of those who took part. While at that time a great many good points were brought out, yet many remain untouched, and no doubt many will remain so. Among the many questions which confront the Hardware dealer of to-day is how to compete with

#### THE DEPARTMENT STORE,

and I have taken this as the subject of my remarks. My idea of the best way to treat department stores is to compete with them, and by this I mean to keep a greater variety of goods. The great trouble I find with most of the retail Hardware dealers is that where there are three or four dealers in a town all keep the same goods—"Bread and Cheese," and nothing more; whereas they should expand and have more of a variety.

To know how best to counteract the influence of these large stores, it is necessary to study their methods, and, if advisable, copy them where they are strong and combat them where they are weak. What is the real difference between the average Hardware store and the ordinary department house? The fact is that every up to date Hardware dealer has a number of departments in his establishment, for if he confined himself strictly to Hardware, I fear he would be very short lived.

#### MANY DEPARTMENTS.

We have at our store in Antigo a Hardware department, a Sporting Goods department, including Guns, Rifles, Revolvers, Ammunition of all kinds, Fishing Tackle, Athletic Goods, such as the Whitely Exerciser, Dumb Bells, Indian Clubs, Boxing Gloves, &c.; a Lamp department, a Crockery and Glassware department, a Tinware and Granite Iron Ware department, a Stove department, a Tin Shop and Repairing department, a Harness department, a Paint, Lead and Oil department, a Pump department, a Sash, Door and Blind department, a Farm Machinery department, a Vehicle department, a Bicycle department, a Sewing Machine department, and

one more, which we are willing to close out, a credit department.

According to this, we have to a certain extent a department store. The so-called department stores in large cities like New York, Chicago, St. Louis and Milwaukee are doing well and making money, at least some of them are, but outside of these, in the smaller towns, where the same thing has been attempted, they are failing and they cannot succeed if the regular dealer gives them the

#### SHARP, INTELLIGENT COMPETITION

they deserve. In my judgment it is far better to have a larger variety of goods and having what people want, and selling it cheap, in fact, if necessary, selling it **very** cheap for a year or two, until these department fiends have gone out of business, than it is to sit down and grumble about it. My observation leads me to believe that most of us do not give the department stores the sharp competition they deserve, and therefore make their pathway the easiest to success.

In order to

#### SUCCESSFULLY COMPETE

with the department store, the Hardware merchant must elevate his business, try and sell a better and higher grade article than can be found in the department and "Cheap John" stores. The Hardware business is second to none, not excepting banking, dry goods, manufacturing or even the professions. It is a business which requires the highest moral, intellectual, honest, straightforward, persevering, everyday business man.

One of the first and most important things is to have your store

#### NEAT, CLEAN AND ATTRACTIVE,

with good show windows and well arranged displays. The displays should be changed at least once a week and often more if time permits. A Hardware store should be made very attractive, so much so that the ladies and children want to go to your store to buy what they want in the Hardware line. I would rather have one lady come to my store than three men.

By this I mean as far as observing things is concerned, and the little shopping they do they will always remember, and are able to tell their friends, and frequently they will come in together to look and perhaps do a little more shopping, but sooner or later they will buy. I always try to make them feel perfectly at ease, and show my goods with pleasure, whether they buy or not.

Department stores should never be mentioned unless forced into it, and then only with as few remarks as possible. The more you talk about them, the more you advertise them to your customers, and they get curious and want to see for themselves, and you may lose a good customer.

#### SPECIAL BRANDS.

It behooves every wide awake Hardware dealer to add special brands. When I say special brands, I mean an article which we have proved to contain merit, the sale of which we can control and the guarantee on which is backed up by the jobber who is supplying us with the goods. We have found it easy to get special brands of practically every staple in our line, of undoubted merit, of equal or superior finish and generally at lower prices. With these goods in our hands it is comparatively easy to sell a Saw, a Chisel, File or Auger Bit with our knowledge of the superior quality of the article.

The impression prevails that it takes too much time to talk special brands. On this point I will say that we never talk or sell special brands of goods that we have not absolute faith in; we never talk up special brands that we cannot control the sale of; but when

#### WE BELIEVE IN AN ARTICLE

and it is ours for that territory, and the catalogue houses and department stores cannot get it, then if we have not time to talk these goods we have not time to make money.

For instance take a common 5-16 Auger Bit. A man



can buy the same anywhere for 10c. Take a special brand and a little better goods, which will cost from 1 to 2 cents more, and it will easily sell for from 5 to 10 cents more.

The same thing holds good on Files. Take an 8-inch Mill File, a Nicholson, Disston, Black Diamond, or any standard brand, and the department store sells them at 10c. So can we, but without much profit. If you have a special brand of your own, show it to your customer and tell him that it is something extra fine, but that it costs 15c., or two for a quarter. The chances are ten to one that he will

#### TAKE THE BETTER GRADE.

and what does this mean to you, Mr. Hardware Dealer? It means from 25 to 50 per cent. difference in your profits.

To illustrate more fully—we will take 10 dozen 8-inch Mill Files at 15c. each, equals \$18. Ten dozen at 10c. each equals \$12, a difference of \$6 net profit. With a few exceptions the same holds good through the whole line of goods.

Take, for instance, a Wash Boiler—a common I. C. or coke tin one, and again you have to compete with the department store, and the result is no profit or a very small one. If a customer comes to my store and wants to buy a boiler, I ask him if he wants a good one, or something cheap. You know what he says—"Both good and cheap." I take the best one I have in the store and show it to him. The price may stagger him. If it does, I get the cheapest one we have and the contrast is so great he is surprised. Then I talk quality and try to convince him that the

#### BEST IS ALWAYS THE CHEAPEST

in the end. The chances are that he will take the best one. A short time ago a farmer's wife came in and asked to see a boiler. She said, "I want a good one this time. I have been married five years and have had seven boilers." Do you think that there was any difficulty in selling her a good 16-ounce all copper Boiler on which I made \$1.50 profit? This is but one of many instances.

#### MARKING GOODS.

To mark all goods in plain figures is another important feature. I deem it very important, for the reason that if a person calls at the store, he usually picks up things and turns them over, and if he can see and know the price it often helps to sell the article. On the other hand, if he has to ask what each article costs, he feels as if he were troubling too much, and is liable to go out without even purchasing that for which he came in.

#### ONE PRICE.

Some, no doubt, will not agree with me on this point, and will say that some persons are bound to Jew down the price, and that having a private mark one can ask an advanced price and then come down a little, thereby obtaining the regular price. This is not good Hardware doctrine. You must bear in mind that you are in one of the noblest businesses, and must try to convince your customer that you have but one price. It may not always work, but in a very bad case we do not come down on the price, but if they are bound to have it cheaper we throw in some small article and the chances are they buy.

#### THE TRAVELING SALESMAN.

In conclusion allow me to say a word in behalf of the traveling salesman. We take it for granted that every one is a gentleman until we find him the contrary. We treat him as we would wish to be treated were we in his position and give him our prompt attention, for his time is as valuable as our own. If we do not care to buy from him, or are not in want of anything, we politely tell him that nothing is needed, and bidding him good day, invite him to call again should he come our way. This gives him an opportunity to

see some one else and perhaps saves him a day's work or a night's sleep.

When the one comes from whom we wish to buy we give him our prompt attention, buy what is needed and let him go. We find this plan most satisfactory to both sides, and we wish to have the good will of every traveler. If we treat him well he can do us a great deal of good, though we may not buy a dollar's worth from him. Should we treat him otherwise, he could do us much injury.

It is greatly to the interest of every Hardware dealer to bear the good will of the traveling salesman who visit him. They are often able to help him, and whether they do so or not will depend upon the treatment they receive at his hands.

C. A. Peck read a paper by Geo. W. Hubbard, Flint, Mich., which had been presented to the Michigan Hardware Association last year, on advertising, which was greatly enjoyed by the convention.

Otto Schlafer, Appleton, suggested a discussion of the expediency of holding evening sessions next year, but the members did not take kindly to the proposition.

Traveling Salesman Fulton, representing the Simmons Hardware Company, was called to the platform and entertained the convention with some stories excellently told. The convention then formally adjourned.

#### Executive Committee.

After the adjournment the Executive Committee met for the transaction of some important business, and among other things authorized C. A. Peck of Berlin and Julius Krueger of Columbus to represent the association at the approaching St. Paul meeting of the Minnesota Retail Hardware Dealers' Association.

The representatives of the Chicago Retail Hardware Dealers' Association who were present comprised the following:

D. McLaughlin, president.  
Fred. Kurtz, vice-president.  
Ehler Goettsche, secretary.  
John Hora, financial secretary.  
J. L. Smith, treasurer.  
F. H. Schanze,  
Sieg Melohn,  
Hans Fehr,  
Th. Krueger,  
Chas. H. Menzel,  
H. E. Gnadl,  
A. Wiese,

J. H. Bixler,  
R. T. Mathiessen,  
H. E. Tying,  
Wm. Noebeling,  
E. Spindler,  
G. Sundwall,  
Chas. Arnold.

The party also included the wife of Treasurer Smith and some gentlemen friends of the members. They enjoyed the privileges of a special car on the Chicago, Milwaukee & St. Paul Railway, and were the recipients of marked attention from their Wisconsin brethren, and greatly enjoyed the attractions of Milwaukee.

#### CONVENTION NOTES.

Quite a number of manufacturing concerns were represented at the convention, among whom were the following:

N. A. Gladding, secretary E. C. Atkins & Co., Indianapolis, Ind.; H. H. Wallis of Wallis, Robinson & Co., manufacturers' agents, 46 Lake street, Chicago; G. H. Brown, representing the Electric Cutlery Company, Newark, N. J.; John J. Sinzich, representing Geo. H. Bishop & Co., Lawrenceburgh, Ind.; C. A. Dager, Chicago, representing the Kearney & Foot Company, New York, and Geo. H. Bishop & Co., Lawrenceburgh, Ind.

Henry M. Gay, who is now with the Wm. Frankfurth Hardware Company, Milwaukee, was present at every session of the convention, and took great interest in the proceedings. He has been traveling through Wisconsin selling Hardware since 1867, and now claims the distinction of being the oldest Hardware salesman in that State.

The Chicago Stove Works made a fine display of Stoves in one of the parlors of the Republican House. The display was in charge of John T. Cady and W. T.

Griffith, who are masters in the art of making their visitors feel at home.

The J. D. Warren Mfg. Company, Masonic Temple, Chicago, distributed handsome cards of invitation to the members to visit the display of the company's modern Hardware shelving at their Chicago headquarters.

E. C. Atkins & Co., Indianapolis, distributed very pretty leather combined card cases and memorandum books.

### Pacific Retail Hardware Association.

**T**HE PACIFIC RETAIL HARDWARE ASSOCIATION, which was organized at Marysville, Cal., January 7, has issued a constitution and by-laws which contain also a list of members substantially the same as that given in these columns in connection with the report of the Marysville meeting. Under date January 28 it has issued an address to the trade which we give below. This address is deserving of careful attention from the manner in which questions of interest to retailers in all parts of the country are touched upon and the definite and practical suggestions which it gives in regard to the interference with their trade by the representatives of manufacturers and jobbers. The address is as follows:

We have to announce to you that an Association of the Retail Dealers in Hardware and Implements has been formed, and that the first meeting took place in Marysville January 7, 1899. We herewith inclose a copy of the constitution and by-laws, which contains the names of the members of the association.

Quite a number of the wholesale jobbers of San Francisco and Sacramento, who were present at the time, were invited to be present at an evening session, and it is with great pleasure that we mention the fact that every expression on their part seemed to meet the views of the members of the organization.

In the executive session the views and grievances of the retailers were freely discussed, and the Executive Committee were instructed to consider it their duty to convey the sentiments therein expressed to the jobbers in a circular letter, which we now have the honor of doing.

The Executive Committee, in expressing the views of the meeting, desire to state that there was no feeling of acrimony or any sentiments expressed antagonistic to the jobbers. We will, however, state as clearly as possible the matters complained of. The mountain or mining dealers consider that some distinction should be made by the jobbers in selling direct to the miners and dealers in the mountain towns. The dealers suggest that in selling to the miners the jobbers charge them a little in advance over what is charged the dealers, the difference therefore being their profit. On staples, such as Shovels, Steel, Iron and Nails, where the profit is small they would be content with a little concession which the jobbers (being associated together and few in number) could easily and readily arrange. This would allow the mountain dealers to meet prices and secure a small profit, and enable them to hold the other trade from the miners in their neighborhood.

The Retail Hardware Association also feels that while it does not wish to interfere with the sale of Shelf Hardware to the building trade and contractors of San Francisco, yet when it comes to selling the Hardware of a house to a farmer or carpenter of the country that a distinction should be made, and that, should a customer of that kind present himself, a reasonable distinction should be made in prices, with the view of protecting the dealers in the vicinity from whence he came.

The same rule should be made general and should include such staples as Nails, Barb Wire, Iron, Horseshoes, Stoves, Tinware, &c.

Another subject which is rather difficult to define is the assiduity of the commercial travelers in hunting up any farmer or individual who may be in want of a little lot of staples, such as Pipe, Nails, Wire, &c., and selling to them at the same prices as the dealers get.

The committee feels that this is the main cause of so many dealers going to the manufacturers direct for staples and other goods, and if some kind of an arrangement could be made which would obviate this the dealers would reciprocate and do more business with the jobbers, whereas, as conditions are at present, the dealer's profits are reduced by that kind of competition, which virtually either drives him out of business or sends him to the manufacturer where he can buy cheaper, even at the risk of overstocking himself.

Then, again, there is considerable complaint on the subject of charges for case and cartage. The feeling

freely expressed was that while on staples which yield a small profit, such as Coal, Iron, Nails and Barb Wire, cartage should be charged and made a separate charge at so much per ton for the exact weight not in excess of what is actually paid by the jobbers, case and cartage on other goods which yield a greater profit should not be charged, but be considered by the jobbers as the legitimate expenses of doing business and treated in the same way that the retailer has to do under the same conditions when he delivers his goods to the customers in his town.

In some cases the cartage charged on smaller invoices would be 5 or 6 per cent. and often more, and undoubtedly greatly in excess of the amount actually paid by the jobber for the service.

In the Farm Implement, Wagon and Buggy business no jobber or manufacturer should solicit retail trade within the sphere of action and in territory of his agent, and should a retail customer present himself and wish to purchase an Implement, Wagon or Carriage, &c., from the jobber's or manufacturer's agent, a retail price should be required, and if the local agent has a contract and devotes his energies to promote the sale of the goods, then the local agent should be credited with the difference between what the article was sold at and the jobbing price, and duly informed by the jobber of the particulars of the sale, and in every case care should be taken to uphold the retail price, with the view of protecting the dealer.

This view should be strongly impressed on the wholesale jobber in Implements, &c., as no retailer will continue to sell even the most popular article unless it yields him a reasonable profit, but will cast about and shift around from one Implement to another in the hope of getting one out of which he can make a profit.

The foregoing sentiments and business ideas are shared alike by all the members of the association, and the Executive Committee is instructed to lay them before you, and it is its desire to try and bring about a general adherence to those maxims and principles, and as each member of the association will be duly informed of any glaring or defiant abuse of them by any individual or firm the committee feels that the association will favor those individuals or firms who will aid them to bring about more happy conditions, and will resent, with all the power it can bring to bear, any direct attempts to treat its reasonable requests in the direction indicated with other than proper business attention and due regard.

It will be very gratifying to the committee to learn that the wholesale jobbers and Implement dealers will consider this letter favorably. It might be well to add that our association is aware that there is a similar organization of the jobbers, who can act as a unit and who have the power to aid and promote our aims, and who at the same time may be obstructed in their desires to meet our views by one or two wholesalers or jobbers. In that case we hope the majority will feel at liberty and consider it their duty to inform the committee of those firms who may oppose them and refuse to join and act harmoniously in this matter, and the committee will in its turn inform the individual members of our association, and leave them to judge and act accordingly.

In conclusion we will say that if any of these views are considered too radical and not in keeping with what your body considers right and proper, our committee will be pleased to hear, not only any modifications or amendments you have to propose, but any other ideas looking to the promotion of the general principle of justice and fair dealing, and a proper appreciation of each other's rights. With much respect, Yours truly,

J. C. WHITE, Marysville.	} Members of Executive Committee.
OSCAR C. SCHULZE, Dixon.	
JOHN SIMPSON, Tehama.	
ELAM BIGGS, Grass Valley.	
J. M. BERRY, Marysville.	

### Trade Items.

**T**HE rapidity with which a new idea in a long established trade can be developed is illustrated in the case of Loaded Shells. Experienced merchants were skeptical of their success from a commercial standpoint when first brought out, believing that every marksman had his own standard in preparing a charge and would not take kindly to a ready made article. One very prominent merchant thus expressed himself, asserting that the inventor was away ahead of his times. But in five years the same merchant found that he had worked up to the purchase of no less than 60 carloads of Loaded Shells in one year.

THE WILCOX MFG. COMPANY, Aurora, Ill., have opened a branch office at 36 Pearl street, Boston, where they keep on hand a full line of their specialties, including the Wilcox Trolley Door Hanger. Hiram W. Colton, well known to the Hardware trade of New England through his long connection with the firm of Chandler & Barber, Boston, is manager of the office and will travel over the New England States visiting the principal Hardware houses.



The fifth annual sportsmen's show, to be held in Madison Square Garden, New York, during March, will continue longer than originally projected. The time has been extended three days, the exposition covering the period March 2-15, Sundays excepted.

THE FAIRBANKS COMPANY, 311 Broadway, New York, are marketing the Oster Stocks and Dies. The Dies are referred to as adjustable, self centering and quick opening tools, and the company's confidence in the quality of the goods is expressed by their offer in their advertisement in this issue to send any responsible concern one to try, which can be returned at the sender's expense if not entirely satisfactory.

E. P. GLEASON MFG. COMPANY, 181-189 Mercer street, New York, in addition to other large lines of goods, manufacture for the Cycle trade Bicycle Pumps in large variety for hand, foot, storage and power, together with Portable Compressed Air Tanks, Nipples and other Bicycle accessories.

THE N. J. CAR SPRING & RUBBER COMPANY, 175-177 Lake street, Chicago, Ill., are distributing cards upon which are fastened samples of  $\frac{3}{4}$ -inch Hose. The brands shown include Reliable, Staple, Trade, Emerald, New Method and Brunswick. The company state that their name and brand are a guarantee of quality.

GEORGE W. GRAHAM, manufacturer and dealer in Wood Handles, Cane Ferrules and various Hardware Specialties, has moved from 28 to 7 and 9 Warren street, New York. He also handles a good line of House Furnishing articles and kindred goods.

In a Special Notice on another page E. Bissell & Co., 12 Murray street and 15 Park place, New York, announce large sales by order of the manufacturers on February 15 and 16, when a large lot of Cutlery will be offered. On the 15th a large assortment of first quality Nickel Trimmed Granite and Pearl Agate Ware and Britannia Ware will also be sold.

UNDER DATE 5th inst. Boston Belting Company, Boston, Mass., announce that they have withdrawn the agency for the sale of their goods from the Simmons Hardware Company, St. Louis, and they are no longer authorized to solicit orders for their manufactures. The Boston Belting Company have made arrangements with the Railway Supply Company, 11 North Sixth street, St. Louis, to represent them in a large portion of the territory formerly covered for them by the Simmons Company. The Railway Supply Company will carry a stock of the goods, and will be in position to fill orders promptly and at bottom factory prices. Their familiarity with mechanical rubber goods and the various purposes for which they are used is referred to.

UNDER DATE 2d inst. Oliver Wire Company, Pittsburgh, announce that while the transfer of the ownership of their plants and properties has been consummated, the name of the corporation remains unchanged, so that their customers are requested to send all orders and inquiries to, and draw all checks in favor of, Oliver Wire Company, and not Oliver Wire Company, trustee. At the annual meeting of stockholders held on the 2d inst. the following Board of Directors was elected: Wallace H. Rowe, Stephen W. Tener, David B. Oliver, Stanley L. Neely and Thomas B. Coles. The following officers were chosen: Stephen W. Tener, president; Stanley L. Neely, treasurer, and Henry B. Lupton, secretary.

J. H. BURT MFG. COMPANY, Springfield, Mass., are sending to the trade a circular illustrating and describing Call's Instantaneous Repair Tool, in which they call attention to the fact that the tool does not enlarge the puncture, and emphasize several other good points.

JACOBY & WESTER, 33 Murray street, New York, were robbed of about \$1000 worth of Pocket Knives, between February 3 and 4. All the goods bear their trade-mark and name, "Jacoby & Wester," and the words "Made in Germany." A circular issued by the firm suggests that should any of the goods be offered for sale, the firm should be notified and the police at the nearest point informed.

In the advertisement in our last issue of the Standard Caster & Wheel Company, their address was erroneously given as 603-607 West Thirty-sixth street, New York. The trade will please note that the correct address is 313-326 East Twenty-third street.

### Havana's New Hardware Store.

K NIGHT & WALL COMPANY, Tampa, Fla., are opening up a new Hardware house in Havana, Cuba, a step which was decided upon after a thorough investigation by several of the members of the company, who have lately visited the island. The company have leased for a term of years a commodious

building at San Pedro No. 28 on Plaza de Luz, near the custom house and docks. They mention that most of the property, especially houses and fences of every kind, was destroyed during the war, and must necessarily be rebuilt, thus creating a very large demand for a great many of the goods which they carry in stock, including machinery and all kinds of implements. They believe that they are specially well situated to handle a good share of this business, owing to the fact that most of their men are acclimated, some being immunes and several of them being very familiar with the language spoken there. Furthermore, they state that they have a great many friends, both among the Cubans and Spaniards, in the city of Havana, with whom they have been dealing for the past ten or more years, their own city, Tampa, being largely made up of Spanish-speaking people, a great many of whom have returned to Havana and urged the company to establish a business there. The company expect, of course, to export most of their goods direct through New York or other convenient ports, and will only draw from their Tampa stock as necessity may require it. For the present they intend to do a strictly jobbing business in all kinds of Heavy and Light Hardware, and for this reason have located near the docks convenient to transportation.

### Requests for Catalogues, Quotations, &c.

J. L. CARROLL has bought out the Hardware business of M. H. Tanner & Co., Winsted, Conn., and is continuing at the old stand. Mr. Carroll has been connected with the Tanner concern for the past 11 years, so that he is entirely familiar with the business. He is intending to add materially to the stock purchased, and will be pleased to hear from manufacturers with catalogues and discount sheets.

E. E. Howell and C. C. Howell, under the style of Howell Bros., will open up a stock of Hardware, Stoves, Tinware, Sporting Goods, &c., in Fairbury, Neb., March 1, or a little later. The Messrs. Howell are referred to as experienced Hardwaremen and advise us that they would appreciate copies of catalogues, discount sheets, &c., from the trade.

The establishment of the Elmer Hardware Company, Galetan, Pa., was entirely destroyed by fire a short time since. Their collection of catalogues and price-lists was consumed, and they will appreciate the assistance of the trade in replacing it. They have rented rooms for temporary use, and have commenced buying stock and will rebuild as soon as spring opens. They are dealers in Stoves, Tinware, all kinds of Heavy and Shelf Hardware, Farming Implements, Building Material, Gas Fittings, Plumbers' Supplies, Brick, Tiles, Cement, &c.

W. H. Taylor & Co., 224 Water street, Norfolk, Va., have opened a store for the sale of Mill Supplies and General Hardware, and their agent, L. T. Gayle, is now making a trip North purchasing stock. The firm will be pleased to receive catalogues and price-lists of goods in their line.

### Miscellaneous Notes.

#### R. H. Wolff & Co. Bicycles.

R. H. Wolff & Co., 118th street and Harlem River, New York, have brought out a pair of roadsters, models 30 and 31, for gentlemen and ladies, respectively. The machine is much lighter than heretofore, and the reinforcements a little longer. The crown is oval and nickeled, the hubs and tread narrower and the Thor seat post fastening with internal binder is used. They also have a racer, model 29, and a pair of chainless wheels with Sager gears, models 32 and 33, for gentlemen and ladies, respectively. The roadsters can be equipped, if so ordered, with the Morrow coasting brake, which permits coasting with the feet on the pedals, which are temporarily thrown out of gear, the rider having complete control of his wheel, as he can pedal forward or backward at will. Back pedaling sets a friction brake against the tread of the rear tire. They also equip wheels with a Salamander or Ruby translucent enamel which is applied after the frame has been polished and nickeled to bring out the luster.

#### The Bean-Chamberlain Mfg. Company.

The Bean-Chamberlain Mfg. Company, Hudson Mich., makers of the Hudson bicycles, are now offering a full line of 11 models, as follows: Model 30, men's, 30-inch wheels, listing at \$60; models 40 and 41, for men and women respectively, listing \$50; models 28 and 29, for men and women, listing \$45; models 32 and 34, the latter

with 30-inch wheels, for men, listing \$45; models 24 and 25, for men and women, listing at \$40, and men's and women's Noxall. The company's annual catalogue is nearly ready for the trade.

#### Hardware Specialties.

L. T. Snow, manufacturer of a line of hardware specialties, 698 Chapel street, New Haven, Conn., issues a new catalogue devoted to the Victor screwless door knob, the strength, durability and perfect adjustment of which are referred to. The knob is made in all styles of finish. Mr. Snow also issues circulars relating to the Universal key ring, brace head crown, Ashworth patent toe clip, Crown nail puller and band cutter and bronze breech loading yacht cannon.

#### Primrose Club Shells.

The Union Metallic Cartridge Company, Bridgeport, Conn., Hartley & Graham, 315 Broadway, New York, have put on the market a new paper shot shell to be known as the Primrose Club brand. It is described as a strong, thoroughly well made shell with long head, can be had empty or loaded, and in the various gauges. The name of the shell originates from the color of the paper.

#### Improved America Refrigerator.

The Bowen Mfg. Company, Fond du Lac, Wis., are calling attention in their advertisement to the improved America refrigerator. This refrigerator has been improved in design and finish so that it may be up to date in every respect for the coming season. The special features, however, which have gained a high reputation for its construction have been retained. These features are principally a removable ice compartment made of galvanized iron; the construction of the interior entirely of metal, so that no wood is left exposed to moisture; the peculiar flue construction, which enables a perfectly free circulation of air; the system by which waste water is quickly drained; the very large condensing surface, and the filling of the walls with mineral wool, which is regarded by the company as the best non-conductor for refrigerators.

#### Foundry Crayons.

Virginia Soapstone Slate Pencil Company, Charlottesville, Va., are calling the attention of the trade to their foundry crayons. These crayons are made of soapstone slate, and are referred to as soft yet not brittle or crumbly, as free from grit, as making a mark that stays and not greasy. The company advise us that the crayons are readily finding a market, and mention Baldwin Locomotive Works, Pencoyd Iron Works and Pennsylvania Steel Company among other customers. The price of the crayons is \$3.50 per 1000, or \$15 per case containing 5000.

#### The Model Grip Wrench.

A new wrench is herewith illustrated, which is manufactured by the National Wrench Company, W. C. Helmbuecher, president, 36 La Salle street, Chicago. The wrench is referred to as being of quick adjustment, made of the best high carbon steel, very simple and easy in its workings, and the jaws as well as the handle as being thoroughly hardened, so that they will not burr when in contact with the nut. It is made in 8 and 10 inch sizes, and is specially intended for the implement and hardware trade. The wrench, it is claimed, is one of the



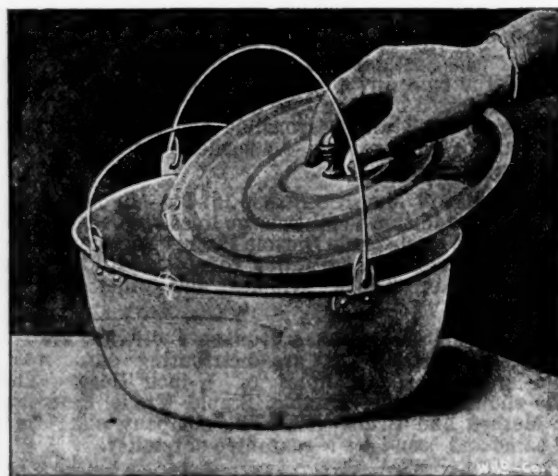
*The Model Grip Wrench.*

quickest devices of the kind, but will never force itself tight enough so as to cling to the nut and requiring to be knocked off.

#### The Security Kettle.

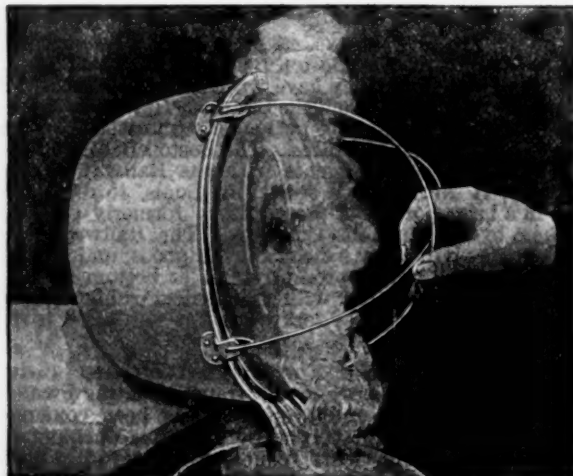
Sidney Shepard & Co., Buffalo, N. Y., are offering the Security kettle shown in the accompanying illustrations. The kettle is called Security because it carries level, the motion of water not tipping it. It is not necessary to use both hands, it is explained, to steady it while carrying it full of hot water, for fear of tipping and scalding. The cover is readily put on and taken off with the balls in position shown in Fig. 1. In Fig. 2 the operation of

the kettle is shown when drawing water from vegetables. The kettle is drawn to the edge of the stove, or rested on the edge of the sink, and tipped, using but one hand, which is out of the way of the steam. The



*Fig. 1.—The Security Kettle.*

cover raises slightly, it can be seen, suspended by the hook at the back, just enough to let off the water and retain the vegetables. Another feature of the kettle is the ease with which it can be held with one hand while scraping out or emptying the contents, the hand being



*Fig. 2.—Draining Water from Vegetables.*

six inches away from the steam. The kettles are made in six sizes each, aluminum and retinned, both having retinned covers.

#### Neverslip Key Hole Saw Handle.

W. C. Ladd, Bristol, Conn., is offering the key hole saw handle, shown herewith. It is made of steel sprung wire, nickel plated, having parallel faces grooved to receive the saw blade. A yoke tightly embraces one end of the handle and is slotted to loosely embrace the other



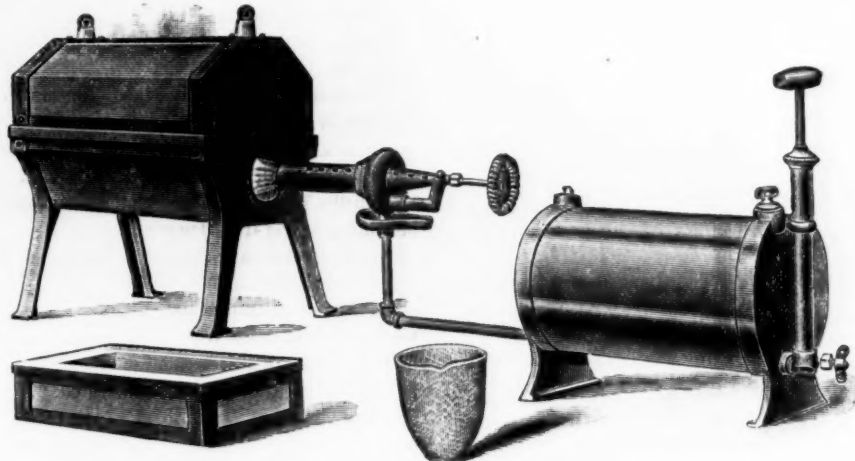
*Neverslip Key Hole Saw Handle.*

end of the handle, permitting the yoke to yield toward the end upon which it is tight, sufficiently to allow for saws of varying width and taper. After the saw is placed in position the free end of the handle is forced against the saw by means of a set screw, thus clamping the edges of the saw the entire distance of contact. The maker claims that the saw will never slip, that it is easily and quickly adjusted, that the handle possesses strength, while light in weight, and that it is medium in price.



### Combination Muffle and Crucible Furnace.

An illustration is given herewith of a new form of heater for operating a combination muffle and crucible furnace, which has been brought out by the White Mfg. Company, 158 Indiana street, Chicago, and is the invention of John C. Dupee, the superintendent of the company. The heater consists of a horizontal tank with an air pump attached which forces either gasoline or kerosene from the tank to the burner. The burner is made on the same principle as that employed in the construction of the company's burners used in their hot blast furnaces and torches. The furnace herewith



Combination Muffle and Crucible Furnace.

shown has outside dimensions 8 x 10 inches, its height is 12 inches and the muffle is 8 x 4 $\frac{1}{4}$  x 3 inches, while the crucible chamber is 5 $\frac{1}{2}$  x 7 $\frac{1}{8}$  x 6 inches. As shown in the cut, it is arranged for use as a muffle furnace, and when it is to be changed into a crucible furnace the top portion is raised and the section shown at the bottom of the cut is placed in a central position, thereby raising the height of the furnace and giving the necessary room to accommodate the crucible. The apparatus is adapted for the use of assayers, refiners, jewelers, dentists, &c., or for general laboratory work.

### A New Bullet.

The Ideal Mfg. Company of New Haven, Conn., are now ready to supply the market with molds for the new bullet herewith illustrated. The bullet is referred to as of the proper caliber and is especially designed for rifles using the 38-55 Marlin and Winchester ammunition. The size of the bullet as cast, it is stated, is a trifle above standard, so that it can be sized after being lubricated to .375 in diameter. The shape of the point from the first band or crimping shoulder is shown to be identical with the 38-330 Marlin, which is shorter than the standard 38-55-255 Marlin; the bands are narrower than



A New Bullet.

the regular 255-grain bullet, and the grooves are also narrower and are cut square and deeper, thus holding the lubrication better and more of it. These smaller divisions of the bearing permit, it is pointed out, of a better distribution of the lubrication in the barrel, which prevents leading, and it also enables the bullet to be inserted into the barrel with a much less pressure, while the extra width of the base band following the lubrication prevents cutting, which deforms the base of bullet, thus deflecting its flight. It is remarked that the broad base band presents a stronger bearing to hold on to the rifling firmly, all of which is beneficial to regularity and accuracy in the shooting. The company state that they are also prepared to furnish their Perfection adjustable molds for this bullet, which will enable the

user to cast the whole variety of lighter weights as designated by the figures in the illustration. They will also make single molds of the different weight bullets which may be ordered. The lighter ones are spoken of as being very fine for light charges, short range target work and small game.

### Nooman's Crank Key Remover.

A. S. Nooman, Rome, N. Y., is offering the crank key remover shown herewith. By the use of the tool the removal of cotter pins is very simple, it is stated, with no

injury to the thread or pin. It is explained that the most stubborn pin will not fail to move, and that the



Nooman's Crank Key Remover.

tool gives a steady pressure without jar to the entire bicycle frame.

### The Ashworth Toe Clip.

The accompanying cut represents a toe clip put on the market by L. T. Snow, New Haven, Conn. This is a basket clip formed of a single piece of wire, whose sides are elastic. It expands to conform to any size and style of shoe, it is explained, and releases the foot in case of a fall. It is stated that it can be adjusted to any size or

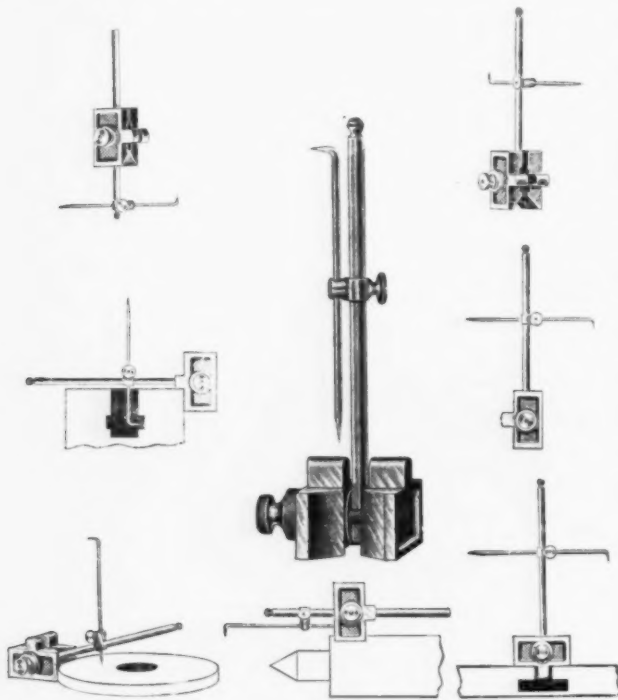


The Ashworth Toe Clip.

shape of shoe without loosening a clamp or screw, even when it is on the pedal, by simply spreading or closing the toe of the clip.

**Surface Gauge No. 100.**

The accompanying cuts relate to a surface gauge put on the market by the Sawyer Tool Company, Fitchburg, Mass. In the gauge, it is explained, an exceptionally easy and fine adjustment is provided, being positive and operative in whatever position the spindle happens to be. The large cut shows the gauge, while the smaller ones represent the different positions in which the tool

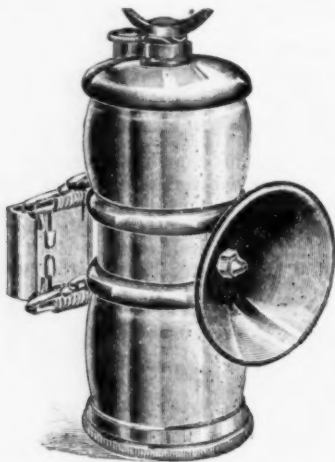


Surface Gauge No. 100.

can be used. One of them shows where it can be readily adapted to a lathe spindle, for use in laying out work on a face plate of the lathe or for internal boring. Another one represents its use on a planer slot by swinging the spindle one-half around. Another position shows it as it would be used in laying out parallel lines where the center cannot be obtained with dividers. The other cuts represent still different positions.

**Gem Acetylene Gas Lamp.**

Manhattan Brass Company, 338 East Twenty-eighth street, New York, have added to the line of gas and oil bicycle lamps made by them the Gem acetylene gas lamp, here shown. It is designed to meet a demand for a moderate priced lamp of this character, and is referred to as



Gem Acetylene Gas Lamp.

particularly suited to export trade. One of its novel features is that the burner and flame project horizontally. A detachable aluminum reflector, without glass lens, magnifies the light, which the manufacturers allude to as resembling in a more powerful form an electric light. Loose carbide or any of the standard cartridges can be

used, and there is ample gas and water capacity. The lamp is made of nicked brass, is 5 inches high, weighs 11 ounces, is cool in operation and the flame will not jar out, we are advised. It has a strong spring bracket, and all parts are interchangeable.

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# Current Hardware Prices.

FEBRUARY 8, 1899.

NOTE.—The quotations given below represent Current Hardware Prices, whether made by manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail Hardware merchants. Very small orders and broken packages often command higher prices, while lower prices are often given to larger buyers.

The character @ is used to indicate a range of price: thus discount 50 & 10 @ 50 & 10 & 5%, signifies that the goods in question are sold at prices ranging from 5% to 10% to 50 & 10 & 5%.

Many of the lists referred to in the following quotations are given in *The Iron Age* Standard Hardware Lists (price 50 cents). On many other articles, however, the different manufacturers have their own lists, which they will send to the trade on application. In the advertising columns will be found the announcements of manufacturers of nearly all kinds of Hardware, who will be pleased to furnish the trade information in regard to their goods and prices.

## Adjusters Blind—

Domestic, # doz. \$3.00...33 1/2 @ 33 1/2 @ 10%  
North's...10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent...40%  
Taplin's Perfection...45%

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anti-Rattlers—

Burton's No. 1...# doz. pr. \$1.00  
Burton's No. 2...# doz. pr. \$0.75  
Fernald's, Wire...# doz. pr. \$0.75

## Anvils—American—

Eagle Anvil, #...7 1/2 @ 7 1/2 @  
Hay-Budden, Wrought...8 1/2 @ 8 1/2 @  
Horseshoe brand, Wrought...9 1/2 @ 9 1/2 @  
Samson, #...7 1/2 @ 7 1/2 @  
Trenton, Wrought...# 8 1/2 @ 8 1/2 @

## Imported—

Armitage's Mouse Hole...8 1/2 @ 8 1/2 @  
Solid Swedish Steel...10 1/2 @ 10 1/2 @  
Peter Wright's...9 1/2 @ 9 1/2 @

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00...20%

## Apple Parers—See Parers, Apple, &c.

## Augers and Bits—

Common Double Spur...80 @ 80 @ 5%  
Boring Machine Augers...80 @ 80 @ 5%  
Car Bits, 12-in. twist, 60 @ 10 @ 10%  
Jennings' Pattern Car Bits...60 @ 60 @ 10%  
Jennings' Pattern Auger Bits...

Adams Art Auger Bit...70 @ 10 @ 70 @ 5%  
Cincinnati Bell Hangers' Bits...30%  
Forstner Pat. Auger Bits...25%  
C. E. Jennings & Co.'s  
No. 10 ext. lip, R. Jennings' list...40 @ 40 @ 10%  
No. 30, R. Jennings' list...40 @ 40 @ 10%  
Russell Jennings...25 @ 25 @ 5%  
L'Hommedieu Car Bit 15 @ 10 @ 15 @ 10 @ 5%  
Snell's...70 @ 70 @ 5%  
Wright's Jennings Bits (R. Jennings' list)...50%

## Bit Stock Drills—

Standard List...60 @ 10 @ 50 @ 10 @ 10%  
Cincinnati, for metal...50 @ 50 @ 10%  
Bryance, for wood...40%  
W. & B. Wood Boring Brace Drills...40%

## Expansive Bits—

Clark's small, #18; large, #36...50 @ 50 @ 10%  
Lavigne's Clark's Pattern, No. 1, # doz. #28; No. 2, #18...50 @ 50 @ 10%  
Steer's No. 1, #28; No. 2, #18...40 @ 40 @ 10%  
Swan's...40 @ 40 @ 10%

## Gimlet Bits—

Common Double Cut...# gr. \$2.75 @ 3.25  
German Pattern...# gr. \$5.00  
Double Cut, makers' lists...50 @ 50 @ 10%  
See also Gimlets.

## Hollow Augers—

Bonney's Adjustable, # doz...\$16.00  
Cincinnati Adjustable...25 @ 10%  
Cincinnati Standard...25 @ 10%  
Douglas's...33 1/2 @ 33 1/2 @ 10%  
Stearns', Common, No. 6...10%  
Stearns', all other numbers...20 @ 10%

## Ship Augers and Bits—

L'Hommedieu's...15 @ 10 @ 15 @ 10 @ 10%  
Snell's...30 @ 10 @ 30 @ 10 @ 10%  
Snell's Ship Auger Pattern Car Bits...40 @ 40 @ 10%  
Watrons'...40 @ 40 @ 10%

## Awl Hafts, See Hafts, Awl.

## Awls—

Brad awls:  
Handled...# gr. \$8.00 @ 3.25  
Unhandled, Shouldered...# gr. 65 @ 70%  
Unhandled, Patent...# gr. 70 @ 75%  
Feg awls:  
Unhandled, Patent...# gr. 89 @ 35%  
Unhandled, Shouldered...# gr. 65 @ 70%  
Scratch awls:  
Handled, Common...# gr. \$3.25 @ 3.75  
Handled, Socket...# gr. \$11.00 @ 12.00

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

First quality, best brands...\$5.00 @ 5.25  
First quality, other brands...\$4.25 @ 4.75  
Jobbers' Special Brands, good quality...\$4.00 @ 4.75  
Cheap Handled Axes...\$4.75 @ 5.25  
Beveled, add 25¢ # doz.

## Axle Grease—See Grease, Axle

## Axles—

Concord, loose collar...4 1/2 @ 4 1/2 @  
Concord, solid collar...5 1/2 @ 5 1/2 @  
No. 1 Common...3 1/2 @ 3 1/2 @  
No. 1 1/2 Common, New Style, 4 @ 3 1/2 @  
No. 2, Solid Collar...4 1/2 @ 4 1/2 @  
No. 7, 8, 11 to 14...60 @ 10 @ 5%  
No. 15 to 18...50 @ 10 @ 5%  
No. 19 to 22...70 @ 10 @ 5%

## Balances—

Sash—  
Coldwell low list...30%

## Vanderbilt...30%

## Spring—

Spring Balances...50 @ 10 @ 60%  
No. 2000 20 30  
Chatillon, # doz...\$0.60 70 1.50  
Chatillon S. Right Balances...50%  
Chatillon Circular Balances...60%

## Barb Wire—See Wire, Barb

## Bars—Crow—

Steel Crowbars, 10 to 40 lb...# 2 @ 2 1/2 @

## Beams, Scale—

Scale Beams, List Jan. 12, '93...50 @ 10%  
Chatillon's No. 1...40%  
Chatillon's No. 2...50 @ 10 @ 50 @ 10 @ 5%

## Beaters—Egg—

New Dover (Dover Stamping Co.)...# doz. 75¢ # gr. \$7.50  
Dover, Ex. Family size...# doz. \$2.00  
New Dover...# doz. 75¢ # gr. \$7.50  
Dover (Standard Co.), No. 10, # gr. \$5.50; No. 5, #6.00; No. 15, #12.00  
Dover (Taplin Pat. Imp.), No. 100, # gr. \$7.00; No. 150, # doz. \$2.00  
Lebanon...# doz. \$2.75 @ \$3.00  
Spiral...# gr. \$4.25 @ \$4.50  
Wonder (S. S. & Co.)...# doz. 75¢

## Bellows—

Blacksmith—  
Standard List...70 @ 1¢ @ 70 @ 10 @ 5%  
Often sold at net prices:  
Inch...80 32 34 36 38 40  
Each...\$3.75 4.00 4.75 5.25 6.00 7.00  
Extra Length:  
Each...\$4.50 5.00 5.50 6.25 7.00 8.50

## Molders—

Inch...9 10 11 12 14 18  
Per doz...\$5.00 6.50 7.75 8.75 11.00 13.25

## Hand—

Inch...6 7 8 9 10 12  
Per doz...\$3.25 3.50 3.75 4.50 5.25 6.00

## Bells—Cow—

Wrought, Sheep and Cow...60 @ 10 @ 70%  
Kentucky...70 @ 10%  
Western...70%  
Jersey...75 @ 10%  
Texas Star...50 @ 10%

## Door—

Gong, Yankee...60 @ 10%  
Lever, R. & E. Mfg. Co.'s...60 @ 10%  
Lever and Pull, Sargent's...45 @ 10 @ 45 @ 10 @ 5%

## Hand—

Hand Bells, Polished...70 @ 10 @ 70 @ 10 @ 5%  
White Metal...70 @ 70 @ 10%  
Nickel Plated...60 @ 60 @ 5%  
Swiss...70%  
Silver Chime...40 @ 10 @ 50%

## Miscellaneous—

Farm Bells...# 2 @ 2 @  
Steel Alloy Church and School...50 @ 10%

## Belting

Rubber—  
Common Standard...75 @ 10 @ 75 @ 10 @ 5%  
Extra...70 @ 70 @ 10%  
Standard...70 @ 10 @ 75%

## Leather—

Best Oak Tanned...80 @ 10 @ 80 @ 10 @ 10%

## Bench Stops—See Stops, Bench

## Benders and Upsetters, Tire—

Brettell Tire Upsetter, #15...50%  
Green River Tire Benders and Upsetters...20%  
Stoddard's Lightning Tire Upsetters...40 @ 50%

## Bicycle Goods—

Lane's Cycle Hanger...33 1/2 @ 35%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—  
See Augers and Bits.

## Bit Holders—See Holders.

## Blind Adjusters—See Adjusters, Blind.

## Blind Fasteners—See Fasteners, Blind.

## Blind Staples—See Staples, Blind.

## Blocks—

Common Jap'd Sheaves...75 @ 75 @ 5%  
Eddy's All Steel, Common Bushed...70%  
Eddy's All Steel, Bronze Bushed...60 @ 5%  
Hartz All Steel, Common Bushed...50 @ 10%  
Hartz All Steel, Bronze Bushed...50 @ 10%  
Ford's Star Brand, Self Lubricating...70%  
Hollow Steel, Ford's Pat. Star Brand...50 @ 10%  
Lane's Pat. Adj., Perfect Safety and Junior...30%  
Stowell's Novelty, Mal. Iron...50 @ 10%  
See also Machines, Hoisting.

## Boards Stove—

Market somewhat irregular.  
Manufacturers quote...30 @ 10 @ 40%  
Jobbers often sell...40 @ 10 @ 50%

## Bolts—

Carriage, Machine, &c.—  
Common, list Jan. 30, '95...75 @ 75 @ 20%

Norway Iron, \$3.00, list Oct. 7, '84...75 @ 10 @ 75 @ 10 @ 5%  
Phila. Eagle, \$3.00 list...85 @ 15%  
Bolt Ends, list Jan. 30, '95...80 @ 80 @ 10%  
Machine list June 12, '96...80 @ 80 @ 10%

## Door and Shutter—

Cast Iron Barrel, Round Brass Knob:  
Inch...3 4 5 6 8  
Per doz...\$0.27 .30 .39 .49 .66  
Cast Iron Bottom, Japanned:  
Inch...6 8 10  
Per doz...\$0.83 1.05 1.65  
Cast Iron Chain, Flat, Japanned:  
Inch...6 8 10  
Per doz...\$1.10 1.39 1.87  
Cast Iron Shutter, Brass Knobs:  
Inch...6 8 10  
Per doz...\$0.49 .77 .88  
Wrought Barrel Brass Knob:  
Inch...3 4 5 6 8  
Per doz...\$0.44 .50 .61 .70 1.28  
Ives' Patent Door, 60 @ 10 @ 50 @ 10 @ 10%

Wrought Flush—  
B. K. Sargent's list...50 @ 10 @ 60%  
B. K. Stanley's list...60 @ 10 @ 60 @ 10 @ 5%  
Sunk, Sargent's or Stanley's list...50 @ 10 @ 50 @ 10 @ 5%

Wrought Shutter, Standard list...60 @ 10 @ 70 @ 70%

Wrought Square, Standard list...75 @ 75 @ 10%

## Stove and Plow—

Plow...70 @ 70 @ 10%  
Stove, list Aug. 27, 1896...70 @ 70 @ 10%

## Tire—

Common, list Feb. 28, '83...80%  
American Screw Company:  
Norway Phila., list Oct. 16, '84...80%  
Eagle Phila., list Oct. 16, '84...85%  
Bay State, list Feb. 28, '83...80%

Franklin Moore Co.:  
Norway Phila., list Oct. 16, '84...80%  
Eagle Phila., list Oct. 16, '84...80%  
Eclipse, list Feb. 28, '83...80%  
Port Chester Bolt & Nut Company:  
Empire, list Feb. 28, '83...80%  
Keystone Phila., list Oct. '84...85%  
Norway Phila., list Oct. '84...80%

## Borers, Tap—

Borer, Tap, ring, with Handle:  
Inch...1 1/4 1 1/2 1 3/4 2  
Per doz...\$3.75 4.75 5.25 6.75  
Inch...2 1/4 2 1/2 2 3/4 3  
Per doz...\$8.00 11.00 12.00 15.00  
Enterprise Mfg. Co...25 @ 30%  
No. 1, #1.25; No. 2, #1.65; No. 3, #2.50 each.

## Boring Machines—See Machines, Boring.

## Bow Pins—See Pins, Bow.

## Boxes, Letter—

Tatum's...50%

## Braces—

NOTE.—Most Braces are sold at net prices.  
Barber's...60 @ 60 @ 10%  
Common Ball, American...\$1.10 @ 1.20  
Fray's Genuine Spofford's...50 @ 10 @ 5%  
Fray's No. 70 to 120, 81 to 123, 207 to 414...50 @ 10 @ 5%  
P. S. & W. Co., Peck's Patent...60 @ 10 @ 50 @ 10 @ 5%

## Brackets—

Shelf, plain; Regular, list...75 @ 75 @ 10%  
Stowell's Shelf...70 @ 3%  
Bradley Shelf Brackets...80 @ 1%

## Bright Wire Goods—See Wire.

## Broilers—

Wire Goods Co...75 @ 75 @ 10%

## Buckets, Well and Fire—See Pails.

## Bucks, Saw—

Hoosier...# gr. \$22.00 @ \$24.00

## Bull Rings—See Rings, Bull.

## Butts—Brass—

Cast Brass, Tiebout's...50%  
Wrought Brass, list Sept., 98, 40 @ 40 @ 10%

## Cast Iron—

Fast Joint, Broad...60 @ 60 @ 10%  
Fast Joint, Narrow...60 @ 10 @ 60 @ 10 @ 10%  
Loose Joint...75 @ 5 @ 75 @ 5%  
Loose Pin...10 @ 5%  
Parliament Butts...75 @ 5 @ 75 @ 5%

## Wrought Steel—

Loose Joint...List Apr. 1, 1895 75 @ 10%  
Narrow and Broad...75 @ 10 @ 10%  
Inside Blind...75 @ 10 @ 10%  
Loose Pin...75 @ 10 @ 10%  
Loose Pin, Ball and Steeple Tip...80 @ 5 @ 80 @ 5 @ 5%  
Bronzed Wrought Narrow and Inside Blind Butts...50 @ 10 @ 50 @ 10 @ 5%

## Cages, Bird—

Henry's, Brass:  
1200 series...10%  
3000, 5000, 1100 series...40%  
200, 300, 600 and 900 series...40 @ 10 @ 50%  
Henry's, Bronze:  
700, 800 series...40 @ 10 @ 50%  
Henry's, Enameled...40 @ 10 @ 50%

## Callipers—See Compasses.

## Calks, Toe—

Burke's, One Prong, Blunt...40 @ 4 1/4 @

Burke's, One Prong Sharp...5 @ 5 1/4 @  
Burke's, Two Prong, Blunt...5 @ 5 1/4 @  
Burke's, Two Prong, Sharp...5 @ 5 1/4 @  
Gautier, One Prong, Blunt...5 @ 5 1/4 @

## Can Openers—See Openers, Can

## Cans, Milk—

Buffalo Pattern:  
Concave Cover...\$1.25 \$2.00 \$2.20  
Convex Cover...1.40 2.15 2.35  
Illinois Pattern...1.50 2.00  
Iowa Pattern...1.75 1.95  
New York Pattern...2.25 2.45  
Baltimore Pattern...2.35 2.55  
Chicago S. Co. Seamless Neck.

Iowa...\$1.30 \$1.50 \$1.65 each  
Surge...1.30 1.50 1.65 each  
Elgin...1.75 1.90 each  
Chicago...1.90 2.00 each

## Cans, Oil—

Galvanized Blue Band, 1-gal., # doz...\$1.60 @ \$1.80  
S. S. & Co., Galvanized Family with faucet, 3-gal., # gro. \$5.4; 5-gal., \$8.0; 10-gal., \$18.00  
Glass Oil...# doz. \$1.80 @ \$1.85

## Caps—Percussion—

Eley's E. B...50%  
G. D...M. 32 @ 34%  
G. D...M. 37 @ 39%  
G. D...M. 47 @ 50%  
Musket...M. 57 @ 60%

## Primers—

Berdan Primers, \$1.00...2%  
B. L. Caps (Sturtevant Shells) \$1.00...2%  
All other primers...\$1.00 @ \$1.10

## Carpet Stretchers—

See Stretchers, Carpets.

## Cartridges—

NOTE.—These prices are sometimes shaded by jobbers.  
B. B. Caps, Con. Ball Swgd...\$1.90  
B. B. Caps, Round Ball...\$1.12 @ 1.19  
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.

Blank Cartridges, 22 cal. \$1.75...2%  
Blank Cartridges, 32 cal. \$8.50...2%  
Cent. Fire, Military and Sporting 15 @ 5 @ 2%  
Cent. Fire, Pistol and Rifle...25 @ 5 @ 2%  
Primed Shells and Bullets...15 @ 5 @ 2%  
Rim Fire Cartridges...50 @ 2%  
Rim Fire, Military...15 @ 2%

## Carpet Sweepers—

See Sweepers, Carpet.

## Casters—

Bed Plate, etc...50 @ 70 @ 5%  
Martin's Patent (Phoenix)...60 @ 60 @ 5%  
Payson's Anti-friction Furniture...70 @ 10 @ 5%  
Payson's Anti-friction Truck, 60 @ 10 @ 5%  
Standard Ball Bearing...30%  
Tatum's Anti-friction...60 @ 60 @ 10%  
Tucker's Patent, low list...50 @ 50 @ 5%

## Cattle Leaders—

See Leaders, Cattle.

## Chain—

American Coil, Cask Lots:  
3-16 3/4 5-16 3/4 7-16 3/4 9-16  
\$5.50 4.10 3.10 2.75 2.70 2.50 2.40  
3/8 3/4 1 inch.  
\$2.35 2.25 2.20 2.15  
For less than Cask lots add 1-10%.

German Coil, list July 24, '97...60 @ 10 @ 10 @ 50 @ 70 @ 5%  
German Halter Chain, list July 24, '97...60 @ 10 @ 10 @ 50 @ 70 @ 5%  
Trace, Wagon and Fancy Chains, list revised April, '95...70 @ 5 @ 70 @ 10%  
Breast, Hitching and Rein Chains  
Covert Sad. Works...70%  
Covert Mfg. Co.:  
Breast...45 @ 2%  
Halter...45 @ 2%  
Heel...45 @ 2%  
Stallion...45 @ 2%  
Jack Chain, Iron, list July 10, '93, 70 @ 10%  
Jack Chain, Brass, list July 10, '93...60 @ 60 @ 10%

Garland's Eureka Weldless Coil...75%  
Garland's Eureka Weldless Coil...70 @ 10%  
Garland's Eureka Weldless Cow Tie 50%  
Omelka Halter Chain...60 @ 60 @ 10%  
Gal. Pump Chain...30 @ 34 @ 40%

## Chalk—(From Jobbers.)

Carpenters', Blue...# gr. 50 @ 52%

## Tanged and Miscellaneous.

Buck Bros. 80¢  
Charles Buck. 80¢  
Tanged Filmmers. 40¢10¢50¢  
L. & J. White, Tanged. 25¢5¢  
Cold Chisels, good quality. 14¢16¢  
Cold Chisels, fair quality. 12¢  
Cold Chisels, ordinary. 7¢7½¢

## Chucks—

Beach Pat., each \$8.00. 20¢  
Graham Patent. 33½¢  
Morse's Adjustable, each \$7.00. 25¢  
Syracuse, Balz Pat. 30¢  
Skinner Patent Chucks:  
Combination Lathe Chucks. 40¢  
Drill Chucks. 40¢  
Independent Lathe Chucks. 40¢  
Improved Planer Chucks. 20¢  
Universal Lathe Chucks. 40¢  
Union Mfg. Co.:  
Combination. 40¢  
Gear Drill. 30¢  
Leared Scroll. 33½¢  
Independent. 30¢  
Union Drill. 40¢  
Universal. 40¢  
Face Plate Jaws. 35¢

## Clamps—

Adjustable Cincinnati. 25¢10¢  
Adjustable, Hammers. 20¢20¢5¢  
Adjustable, Stearns. 30¢30¢10¢  
Cabinet, Sargent's. 45¢10¢50¢10¢  
Carriage Makers, P. S. & W. Co. 40¢10¢  
Carriage Makers, Sargent's. 50¢10¢50¢10¢5¢  
Cincinnati Carpenters, &c. 25¢10¢  
Joiners' Clamps, Tatum's. 25¢10¢  
R. I. Tool Co.'s Wrought Iron. 25¢  
Saw Clamps, see *Files*, *Saw Files*.  
Stearns Malleable, with Wrought Iron. 75¢75¢5¢  
Stearns Steel. 35¢10¢  
Tatum's Joiners' Adjustable. 35¢10¢  
Tatum's Quilt, Cabinet, &c. 40¢  
Warner's. 40¢10¢40¢10¢5¢

## Cleaners, Walk—

Star Socket, All Steel. 4¢ doz. \$4.00 net  
Star Shank, All Steel. 4¢ doz. \$3.75 net

## Cleavers, Butchers'—

Foster Bros. Flat Hds. 30¢; Rd. Hds. 40¢  
New Haven Edge Tool Co.'s. 40¢  
Nichols Bros. Flat hdl. 30¢; Rd. hdl. 40¢  
Fayette R. Plumb. 33½¢7½¢  
P. S. & W. 33½¢35¢33½¢10¢  
L. & J. White. 25¢

## Clippers—

Chicago Flexible Shaft Company:  
Handy Toilet. 7¢ doz. \$7.20  
Masotte Toilet. 7¢ doz. \$7.40  
Monitor Toilet. 7¢ doz. \$9.00  
Stewart's Patent. 7¢ doz. \$10.00  
Hotchkiss Horse Clippers. 7¢ doz. \$10.00  
No. 10, \$18; No. 20, \$15.00; No. 22, \$13.80; No. 20, \$13.20; No. 8, \$10.80.  
Hotchkiss Toilet Clippers. 7¢ doz. \$10.00  
No. 1, \$9.00; No. 101, \$10.80; No. 201, \$10.80; No. 800, \$13.20; No. 500, \$15.  
Clips, Axle—  
Eagle and Superior ¼ and 5-16 inch. 75¢75¢10¢  
Norway, ¼ and 5-16 inch. 70¢70¢10¢

## Cloth and Netting, Wire

—See *Wire*, &c.

## Cocks, Brass—

Hardware list (Globe, Kerosene, Lever, Bibbs, Racking, &c.). 70¢70¢10¢

Coffee Mills—See *Mills*, *Coffee*.

## Collars, Dog—

Brass, Pope & Stevens' list. 40¢  
Chapman Mfg. Company, new list. 40¢  
Embossed, Gut. Pope & Stevens' list. 30¢10¢  
Leather, Pope & Stevens' list. 40¢

## Combs, Curry—

Fitch's. 25¢10¢  
Hotchkiss, List Nov. 20, '98. 25¢10¢  
New York Stamping Co., List Sept. 17, '97. 25¢10¢  
With Wire Handle. 7¢ doz. \$1.20  
With Strap Handle. 7¢ doz. \$1.50

## Compasses, Dividers, &amp;c.

Ordinary Goods. 70¢10¢75¢  
Bemis & Call Co.'s:  
Dividers. 65¢  
Callipers, Call's Patent Inside. 55¢  
Callipers, Double. 70¢  
Callipers, Inside or Outside. 70¢  
Callipers, Wing. 90¢  
Compasses. 50¢55¢  
J. Stevens A. & T. Co. 25¢10¢

## Coolers, Water—

S. S. & Co.: 2-gal., \$2.70; 3-gal., \$3.20;  
4-gal., \$3.60; 6-gal., \$4.75; 8-gal., \$7.20; 11-gal., \$11; 14-gal., \$14 each 60¢

## Coopers' Tools—

—See *Tools*, *Coopers'*.

## Cord—

Sash—  
Braided, Drab and Fancy. 55¢. 80¢  
Braided, White. 14¢20¢  
Cable Laid Italian. 14¢; A, 18¢; B, 16¢  
Common India. 14¢  
Patent Russia. 12¢13¢  
Cable Laid Russia. 13¢14¢  
India Hemp, Braided. 13¢  
India Hemp. 10¢10¢  
Patent India. 10¢  
Pearl Braided. 14¢  
Massachusetts, W. & S. 17¢  
Eddystone Braided Cotton. 18¢  
Harmony Cable Laid Italian. 18¢  
Oswan Mills:  
Crown, Solid Braided White. 18¢  
Braided, Giant, White. 16¢  
Peerless:  
Cable Laid Italian. 16¢  
Cable Laid Russia. 15¢  
Cable Laid India. 14¢  
Braided India. 18¢  
Samson:  
Braided, Drab Cotton. 33¢35¢  
Braided, Italian Hemp. 31¢33¢  
Braided, Linen. 35¢36¢  
Braided, White Cotton. 27¢30¢

## Silver Lake:

A quality, Drab, 40¢. 15¢7½¢  
A quality, White, 35¢. 15¢7½¢  
B quality, Drab, 35¢. 15¢7½¢  
B quality, White, 30¢. 15¢7½¢  
Italian Hemp, 40¢. 15¢7½¢  
Linen, 57¢. 15¢7½¢

## Wire, Picture—

Braided or Twisted. 85¢95¢55¢

## Corn Knives and Cutters

—See *Knives*, *Corn*.

## Crackers, Nut—

Acme, Japanned. 7¢ gr. \$30. 40¢  
Acme, Nickel Plated. 7¢ gr. \$30. 20¢  
Turner & Seymour Mfg. Co. 50¢

## Cradles—

Grain. 55¢

## Crayons—

White Round Crayons, 7 gross. 5¢6¢  
Cases, 100 gr. \$4.50 to \$5.00, at factory.  
D. M. Steward Mfg. Co.:  
Metal Workers' 7¢ gr. \$3.50. 20¢25¢  
Railroad, 7¢ gr. \$2.00. 20¢25¢  
Rolling Mill, 7¢ gr. \$2.50. 20¢25¢  
Soapstone Pencils, 7¢ gr. \$1.50. 20¢25¢  
See also *Chalk*.

Creamery Pails—See *Pails*, *Creamery*.

## Crooks, Shepherds'—

Fort Madison, Heavy. 7¢ doz. \$7.00  
Fort Madison, Light. 7¢ doz. \$6.50

Crow Bars—See *Bars*, *Crow*.

## Cultivators—

Victor Garden. 7¢ doz. \$10.00

## Curry Combs—

—See *Combs*, *Curry*.

## Cutters— Meat—

American. 80¢  
Nos. 1 and 2. 1 2 3 4 5  
Each. 7¢ 7¢ 10¢ 10¢ 25¢ 50¢ 50¢  
Connecticut, No. 0, \$2.00; No. 1, \$2.50;  
No. 8, \$3.00; No. 12, \$3.50 33½¢  
Enterprise. 20¢25¢7½¢  
Nos. 5 10 12 22 32  
Each. 7¢ 7¢ 7¢ 2.50 4 8 8  
Dixon's. 7¢ doz. 33½¢  
No. 1. \$14.00 \$17.00 \$19.00 \$30.00  
Hale's. 7¢ doz. 70¢70¢5¢  
Nos. 11 12 13  
Home No. 1, 7¢ doz. \$28.00 60¢  
Little Giant, 7¢ doz. 50¢10¢  
Nos. 305 310 312 320 322  
\$35.00 \$48.00 \$44.00 \$72.00 \$68.00  
Miles' Challenge, 7¢ doz. 45¢45¢10¢  
Nos. 1 2 3  
\$22.00 \$30.00 \$40.00  
New Triumph No. 605, 7¢ doz. \$24.00. 35¢5¢  
Woodruff's. 7¢ doz. 33½¢  
Nos. 100 150  
\$15.00 18.00  
Chadborn's Smoked Beef Cutter, 7¢ doz. 60.00  
Enterprise Beef Shavers. 25¢30¢

## Slaw and Kraut—

Tucker & Dorsey Mfg. Co.:  
Kraut Cutters. 50¢50¢10¢  
Slaw Cutters, 1 Knife, 7¢ gr. \$15. 15¢  
Slaw Cutters, 2 Knife, 7¢ gr. \$20. 20¢27¢

## Tobacco—

All Iron, Cheap. 7¢ doz. \$4.50 to \$5.00  
Enterprise. 25¢30¢  
National. 7¢ doz. \$31.00. 30¢5¢  
Sargent's. 7¢ doz. \$24.00. 60¢60¢10¢

## Washer—

Appleton's. 7¢ doz. \$18.00. 60¢10¢60¢10¢10¢  
Bonney's. 7¢ doz. \$4.25. 25¢10¢  
Cincinnati. 7¢ doz. 25¢10¢  
Tatum's. 7¢ doz. 25¢10¢

## Diggers, Post Hole, &amp;c.—

Gem, Improved. 7¢ doz. \$3.50 to \$9.00  
Iwan's Improved Post Hole Auger. 40¢5¢  
Iwan's Perfection Post Hole Digger. 7¢ doz. \$10.00  
Samson, 7¢ doz. \$36.00, 25¢10¢25¢10¢5¢  
Vaughan's Post Hole Auger. 7¢ doz. 5.25 to 5.75

Dividers—See *Compasses*.Dog Collars—See *Collars*, *Dog*.

## Door Checks—

—See *Checks*, *Door*.

## Door Springs—

—See *Springs*, *Door*.

## Drawers, Money—

Tucker's Pat. Alarm Till No. 1, 7¢ doz. \$18; No. 2, \$12; No. 3, \$11; No. 4, \$12.

## Drawing Knives—

—See *Knives*, *Drawing*.

## Drills and Drill Stocks—

Common Blacksmith's Drill, each \$1.50  
Bench Drills, Stearns'. 50¢50¢10¢  
Blacksmith's Self-feeding, each \$7.50, 20¢  
Breast, P. S. & W. 25¢  
Goodell Automatic Drills. 40¢10¢  
Ratchet, Bignall & Keeler. 80¢5¢  
Ratchet, Curtis & Curtis. 25¢  
Ratchet, Ingersoll's. 25¢  
Ratchet, Parker's. 40¢  
Ratchet, Weston's. 20¢25¢  
Ratchet, Whitney's. 20¢10¢

## Whitney's Hand Drill, No. 1, \$10.00;

Adjustable, No. 10, \$12.00. 33½¢

## Twist Drills—

Standard List. 80¢10¢5¢60¢10¢10¢

## Drill Bits or Bit Stock

Drills—See *Augers* and *Bits*.

Drill Chucks—See *Chucks*.

## Dripping Pans—

—See *Pans*, *Dripping*.

## Drivers, Screw—

Balsey's Screw Holder and Driver, 7¢ doz. 2½-inch, \$5; 4-in., \$7.50 6-in., \$10. 40¢  
Brace Screw Drivers. 25¢10¢5¢  
Buck Bros. 30¢  
Buck Bros' Screw Driver Bits. 27½¢  
Champion. 40¢10¢  
Disston's. 50¢50¢10¢  
Douglass Mfg. Co. 20¢20¢10¢  
Electric Spiral. 50¢10¢10¢5¢  
Ellrich's Socket. 40¢10¢  
Fray's Hol. H'dle Sets, No. 3, \$12.00 50¢  
Gay & Parsons' Ratchet. 20¢25¢  
Goodell's Automatic. 50¢10¢10¢50¢10¢10¢5¢  
Hercules, W. & B. 70¢75¢  
Howard-Allard Spiral. 50¢10¢10¢5¢  
Jones Reversible. 50¢  
Knapp & Cowles:  
Nos. 1 and 2. 70¢10¢  
No. 3. 60¢10¢  
Nos. 4 and 60, Acme and Ideal. 60¢10¢  
Mayhew's Black Handle. 50¢  
Mayhew's Monarch. 45¢10¢  
New England Specialty Co. 50¢10¢  
New York, Manhattan and Handy. 30¢  
Sargent & Co.'s:  
Nos. 1, 30, 40 and 60. 50¢10¢50¢10¢5¢  
Nos. 50 and 55. 50¢10¢10¢60¢5¢  
Screw Driver Bits. 70¢75¢  
Stanley's R. & L. Co.'s:  
No. 64, Varnished Handles. 70¢10¢  
No. 86. 75¢10¢  
Syracuse Screw Driver Bits. 40¢

Egg Beaters—See *Beaters*, *Egg*.

## Emery—No. 4 to No. 54 to Flour, CF

Kags, 7¢ doz. 46 gr. 1.80 gr. F.F.F.  
1½ kags, 7¢ doz. 4½¢ 5 8 3 4  
1½ kags, 7¢ doz. 4½¢ 5 8 3 4  
10-cans, 10 6 6 6 5 6  
In case, 6 6 6 6 5 6  
10-cans, less than 10 10 10 8 8

Enameled and Tinned Ware—See *Ware*, *Hollow*.

## Escutcheon Pins—

—See *Pins*, *Escutcheon*.

## Extractors, Lemon Juice

—See *Squeezers*, *Lemon*.

## Fasteners, Blind—

Zimmerman's. 50¢10¢

## Faucets—

B. & L. B. Co.:  
West's Lock, Open and Shut Key 50¢10¢  
Burnside's Red Cedar. 50¢  
Burnside's Red Cedar, bbl. lots. 50¢10¢  
Cork Lined. 70¢5¢70¢10¢  
Metallic Key, Leather Lined. 65¢10¢

John Sommer's Peerless Tin Key. 40¢  
John Sommer's Boss Tin Key. 50¢  
John Sommer's No Brand Metal Key. 60¢  
John Sommer's W. P. Metal Key. 40¢  
John Sommer's Diamond Lock. 40¢  
John Sommer's L. X. L. Cork Lined. 50¢  
John Sommer's Reliable Cork Lined. 60¢  
John Sommer's Common Cork Lined. 70¢  
John Sommer's Chicago Cork Lined. 60¢  
John Sommer's O. K. Cork Lined. 50¢  
John Sommer's Perfection Cedar. 40¢  
John Sommer's Cedar (in bbls.). 50¢10¢  
Star Metal Plug, new list. 40¢40¢5¢  
Stearns' Wood, No. 200, Wood-lined Key. 50¢10¢  
Stearns' Matchless, Wood, No. 800. 60¢  
Stearns' Gem, Wood, No. 400. 60¢10¢  
Lockport, Metal Plug, reduced list. 60¢5¢  
Self Measuring. 70¢  
Enterprise. 7¢ doz. \$36.30. 40¢  
Lane's. 7¢ doz. \$36.00. 33½¢  
National Measuring. 7¢ doz. \$36.00, 33½¢

## Felloe Plates—

—See *Plates*, *Felloe*.

## Fifth Wheels—

Brewster. 75¢10¢80¢  
Derby and Cincinnati. 70¢10¢75¢

## Files—Domestic—

Best Brands. 70¢70¢10¢10¢  
Good Brands. 75¢10¢80¢5¢  
Fair Brands. 80¢5¢80¢10¢  
Second Quality. 80¢10¢80¢

## Imported—

Stubbs' Tapers. Stubbs' list, July 24, '97. 80¢33½¢

## Fixtures, Grindstone—

Inch. 15 17 19 21 24  
Per doz. \$2.50 2.50 2.75 3.25 4.50  
Stowell's. 55¢10¢  
P. S. & W. Co. 50¢10¢10¢  
Reading Hardware Co. 80¢20¢10¢  
Sargent's Patent. 70¢10¢70¢10¢10¢

## Fluting Machines—

—See *Machines*, *Fluting*.

## Fodder Squeezers—

—See *Squeezers*, *Fodder*.

## Forks—

Hay, 2 tine. 70¢7½¢2¢  
Hay, 3 tine. 70¢10¢2¢  
Manure, 4 tine. 70¢15¢10¢2¢  
Manure, 5 and 6 tine. 70¢20¢  
Spading. 75¢5¢2¢4¢2¢  
Victor, Hay. 75¢5¢2¢  
Victor, Manure. 75¢15¢  
Victor, Header. 75¢5¢  
Champion, Hay. 75¢2¢4¢2¢  
Champion, Manure. 60¢33½¢2¢  
Columbia, Hay. 70¢15¢  
Columbia, Manure. 75¢12¢1¢2¢  
Columbia, Spading. 60¢23½¢2¢  
Hawkeye Wood Barley 4 tine 7¢ doz. \$5.00; 6 tine, \$5.50.  
Plated see *Spoons*.

## Frames—

## Saw—

Red, Polished and Varnished. 7¢ doz. \$1.00 to \$1.10  
White. 7¢ gro. \$5.25 to \$5.50

## Screens, Window and Door—

Bonanza Window Screens. 60¢60¢5¢  
Flyer Window Screens. 50¢10¢5¢  
Maine Window Screen Frames. 50¢  
Perfection Window Screens. 60¢50¢5¢  
Phillips' Window Screen Frames. 60¢5¢  
Porter's Extension Window Screens. 60¢5¢  
Stearns' Frames and Corners 25¢25¢10¢  
Stearns' Monarch Adjustable Window Screens. 50¢  
Stearns' Gem Window Screen Frames. 25¢10¢  
Wabash Adj. Window Screen. 50¢  
Warner's Screen Corner Irons. 33½¢10¢

## Freezers Ice Cream—

Qts.	2	3	4	6	8	10
Best.	\$1.30	1.50	1.75	2.20	2.90	8.80
Good.	\$1.20	1.30	1.60	2.00	2.60	8.50
Fair.	\$1.00	1.10	1.30	1.75	2.30	2.90

## Fruit and Jelly Presses—

—See *Presses*, *Fruit* and *Jelly*.

Fry Pans—See *Pans*, *Fry*.

## Funnels—

Gersdorff's Perfection, Standard and Globe; 1 to 3 gro., 10¢5¢; 3 to 5 gro., 20¢5¢

## Fuse—

	Per 1000 feet.
Hemp Fuse.	\$2.80
Cotton Fuse.	2.90
Single Taped Fuse.	3.50
Double Taped Fuse.	4.70
Triple Taped Fuse.	5.70

## Gates, Molasses—

Stearns' Molasses and Oil. 30¢10¢  
Stebbin's. 30¢20¢35¢

## Gauges—

Barrett's Comb. Roller Gauge. 7¢ doz. \$4.75 to \$7.25  
Marking, Mortise, &c. 60¢10¢60¢10¢10¢  
Stanley R. & L. Co.'s Butt & Rabbit Gauge. 25¢10¢  
Wire, Brown & Sharpe's. 25¢  
Wire, Morse's. 25¢  
Wire, P. S. & W. Co. 10¢10¢  
Wire, Wheeler, Madden & Co. 10¢

## Gimlets—

Nail, Metal, Assorted. 7¢ gr. \$2.30  
Spike, Metal, Assorted. 7¢ gr. \$4.60  
Nail, Wood Handled, Ass'd. 7¢ gr. \$1.30  
Spike, Wood Handled, Ass'd. 7¢ gr. \$4.90

## Glue—

Le Page's Liquid, List A, 37½¢; List B, 33½¢; List C, 25¢

Glue Pots—See *Pots*, *Glue*.

## Grease, Axle—

Allerton's Axle:  
12 Tins, 7¢ gr. \$9.00  
5 Tins, 7¢ doz. \$2.00; 5 Tins, \$3.00;  
10 Tins, \$5.00.  
25 Tins wood pails. 7¢ doz. \$12.00  
Dixon's Everlasting. 10¢ wood pails, &c. 55¢  
Dixon's Everlasting, in box. 7¢ doz. 1.50  
\$1.20; 2 Tins \$2.00  
Lower grades, special brands. 7¢ gr. \$5.00 to \$5.50

## Grindstone Fixtures—

—See *Fixtures*, *Grindstone*.

Gun Powder—See *Powder*.Hack Saws—See *Saws*.

## Hafts, Awl—

Peg Patent, Leather Top. 7¢ gr. \$4.90  
Peg Patent, Plain Top. 7¢ gr. \$3.45  
8 win., Brass Ferrule. 7¢ gr. \$1.50  
Saddlers', Brass Ferrule. 7¢ gr. \$1.35  
Peg, Common. 7¢ gr. \$1.25  
Brad, Common. 7¢ gr. \$1.25

## Halters and Ties—

Covert 'fig. Co., Web and Rope. 45¢2¢  
Covert's Saddlery Works, 98 list. 60¢20¢



## Heavy Hammers and Sledges—

3 lb and under..... 15¢  
3 to 5 lb..... 20¢  
Over 5 lb..... 30¢  
Wilkinson's Smiths'..... 10¢

## Handcuffs and Leg Irons

See Police Goods.

## Handles—

### Cross-Cut Saw Handles—

Atkins..... 40¢  
Champion..... 45¢  
Ely's Perfection..... 33.00

## Iron, Wrought or Cast—

Barn Door, 1/2 doz. \$1.40..... 20¢  
Bronze Iron Drop Latches..... 60¢  
Chest, Sargent's list..... 50¢  
Door or Thumb..... 10¢  
Nos. 1 2 3 4  
doz. \$0.90 1.00 1.08 1.35 1.50

Jap'd Store Door Handles—Nuts, 1/2 doz. \$1.10; no plate, 80¢.

Roggin's Latches..... 28¢

## Wood—

Auger, assorted..... 25¢  
Auger, large..... 25¢  
File, assorted..... 15¢  
Brad Awt..... 15¢  
Apple Firmer Chisel, large..... 25¢  
Apple Firmer Chisel, ass'd..... 25¢  
Hickory Firmer Chisel, large..... 25¢  
Hickory Firmer Chisel, ass'd..... 25¢  
Socket Firmer Chisel, ass'd..... 25¢  
Socket Framing Chisel, ass'd..... 25¢  
Hammer, Hatchet, Axe, &c..... 50¢  
Hoe, Rake and Fork..... 60¢  
Shovel and Spade, Wood D'Handle, 60¢  
Hand Saw, Varied, 1/2 doz. 75¢  
Plane Handled..... 50¢  
Jack, 1/2 doz. 13¢; Jack Bolter..... 55¢  
Fore, 1/2 doz. 35¢; Fore, Bolted..... 70¢

## Hangers—

Barn Door, New Pattern, Round Groove, Regular..... 3 4 5 6 8 30  
doz. \$1.28 1.38 2.18 2.84 3.30

Barn Door, New England Pattern, Check Back, Round Groove, Regular..... 3 4 5 6  
doz. \$2.80 3.74 4.84 6.16

Bigelow & Dowse Co.:  
Paragon, No. 1, \$3.50; No. 2, \$4.50;  
No. 3, \$5.50

Chicago Spring Butt Co.:  
Friction..... 35¢  
Oscillating..... 35¢  
Big Twin..... 35¢  
Chisholm & Moore Mfg. Co.:  
Advance..... 60¢  
Cleveland..... 60¢  
Baggage Car Door..... 50¢  
Elevator..... 40¢  
Railroad..... 55¢  
Cronk Hanger Co.:  
Roller Bearing..... 70¢  
Steel Covered..... 60¢  
Lane Bros.:  
Parlor, Standard..... 40¢  
Barn Door, Standard..... 60¢  
Covered..... 60¢  
Cycle, 1/2 doz. \$12.00..... 33¢  
No. 50..... 60¢  
Parlor Door, New Model..... 40¢  
Lawrence Bros.:  
Crown..... 60¢  
New York..... 60¢  
Sterling..... 60¢  
McKinney Mfg. Co.:  
No. 2, Standard, \$18..... 60¢  
No. 1, Special, \$13..... 60¢  
Payson Mfg. Co.:  
Pendulum, No. 533..... 32.40  
E. C. Stearns & Co.:  
Davis Parlor Door..... 50¢  
Gem Parlor Sliding Door..... 50¢  
Challenge..... 50¢  
Steel Single Track Parlor, 1/2 doz. \$10.00..... 50¢  
Royal Parlor Door..... 50¢  
Warner's Pat..... 20¢  
Warner's Imp'd Single..... 40¢  
Stowell Mfg. and Foundry Co.:  
Badger..... 60¢  
Baggage Car Door..... 35¢  
Climax Anti-Friction..... 55¢  
Elevator..... 40¢  
Interstate..... 60¢  
Magic..... 50¢  
Matchless..... 60¢  
Nansen..... 60¢  
Parlor Door..... 50¢  
Railroad..... 55¢  
Street Car Door..... 50¢  
Steel, Nos. 300, 400, 500..... 45¢  
Wild West..... 50¢  
Zenith for Wood Track..... 55¢  
Taylor & Boggs Foundry Co.:  
Kidder's..... 50¢  
Terry Mfg. Co.:  
Ideal..... 70¢  
Modern..... 70¢  
Modern, Covered..... 70¢  
Safety..... 70¢  
Shield..... 70¢  
Solid..... 70¢  
Wrought..... 70¢  
Van Wagoner & Williams Hdw Co.:  
American Trackless..... 33¢  
Wilcox Mfg. Co.:  
Aurora Steel Endless..... 60¢  
Bike Roller Bearing..... 60¢  
Bike Steel Endless..... 60¢  
C. J. Roller Bearing..... 60¢  
Cycle Ball Bearing..... 60¢  
Dye Steel..... 60¢  
Economical Single Track..... 50¢  
L. T. Roller Bearing..... 70¢  
New Era..... 50¢  
New Richards..... 60¢  
O. K. Roller Bearing..... 70¢  
Prindle Improved..... 60¢  
Richards' Improved..... 60¢  
Richards' Single Track..... 50¢  
Wilcox Dwarf Roller Bearing..... 40¢  
Wilcox Ives..... 60¢  
Wilcox Tandem Roller Bearing..... 60¢  
Wilcox Trolley Ball Bearing..... 40¢  
Wilcox Trolley Roller Bearing..... 50¢  
Wilcox Trolley Roller Bearing..... 40¢  
Fire..... 40¢  
Wood Track..... 60¢

## Harness Menders—See Menders.

## Harness Snaps—See Snaps.

## Hasps—

McKinney's Perfect Hasp, 1/2 doz. \$1.10..... 40¢  
Wrought Hasps, Staples, &c.—See Wrought Goods.

## Hatchets—

Blood's, Hunt's, Plumb's, Underhill's, etc..... 40¢  
Cheaper Brands..... 50¢

## Hay and Straw Knives—

See Knives.

## Hinges—

### Blind Hinges—

Clark Mfg. Co.:  
No. 1 Blind Hinge, Old Pattern, "Special"..... 80¢  
No. 1 Blind Hinge, "Diamond" (with tip)..... 80¢  
No. 1 Blind Hinge "Cottage" (with tip)..... 80¢  
Nos. 1, 3, 5 Blind Hinges, regular 1868 old Pattern..... 80¢  
Nos. 1, 3, 5 Blind Hinges, "Victor" (with double tip)..... 80¢  
No. 50 Blind Hinge, both "Noiseless" and "Empire"..... 80¢  
Lull & Porter Old Style Shutter..... 80¢  
Dixie, L. & P. Shutter..... 80¢  
Buffalo Reversible Shutter..... 80¢  
Mortise Gravity Blind..... 50¢  
Huffer..... 50¢  
Parker..... 75¢  
North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50..... 10¢  
Reading's Gravity..... 75¢  
Sargent's, Nos. 1, 3, 5, 11, 13, 75¢

### Wrightsville Hardware Co.: Acme, Lull & Porter..... 80¢ Buffalo Gravity Locking, Nos. 1, 3 and 5..... 80¢ Champion Gravity Locking, No. 75..... 80¢ 1868, Old Pat'n, Nos. 1, 3 & 5..... 80¢ Tip Pattern, Nos. 1, 3 & 5..... 80¢ Double Locking, Nos. 20 and 25..... 80¢ Empire, Nos. 101 and 103..... 80¢ Niagara Gravity Locking, Nos. 1, 3 and 5..... 80¢ Noiseless, Nos. 50, 60, 65 and 55..... 80¢ O. S. Lull & Porter..... 80¢ Pioneer, Nos. 060, 45 and 54..... 75¢ Steamboat Gravity Locking, No. 10..... 80¢ Stanley's Steel Gravity Blind Hinges, 1/2 doz. sets \$1.30..... 40¢

### Gate Hinges—

Clark Mfg. Co.'s Nos. 1 and 2..... 70¢  
Clark Mfg. Co.'s No. 3..... 70¢  
N. E. Reversible, 1/2 doz. \$5.60..... 60¢  
N. Y. State, 1/2 doz. \$4.90..... 60¢  
Shepard's, Nos. 1, 2, 3, 60¢  
Western, 1/2 doz. \$4.20, 60¢

### Spring Hinges—

J. Bardsley:  
Bardsley's Patent Checking..... 15¢  
Bommer Bros.:  
Chicago Spring Butt Co.:  
Chicago..... 30¢  
Garage City Engine House..... 30¢  
Keene's Saloon Door..... 30¢  
Payson Mfg. Co.:  
Oblique, Dbl. Acting..... 50¢  
E. C. Stearns & Co.:  
No. 45 and 51..... 70¢  
Stover Mfg. Co.:  
Ideal, No. 16, Detachable, 1/2 gr. \$12.50..... 60¢  
Ideal, No. 4..... 60¢  
New Idea No. 1..... 60¢  
New Idea, Double Acting..... 45¢  
Van Wagoner & Williams Hdw Co.:  
Acme..... 30¢  
American..... 30¢  
Columbia, No. 14..... 80¢  
Columbia, No. 18..... 80¢  
Crown..... 30¢  
Gen..... 30¢  
Knox..... 30¢  
Oxford..... 30¢

### Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1894:  
Light Strap Hinges..... 70¢  
Heavy Strap Hinges..... 80¢  
Light T Hinges..... 70¢  
Heavy T Hinges..... 80¢  
Extra Heavy T Hinges..... 80¢  
Plate Hinges..... 6 to 12 in. 5¢  
Providence..... 14 to 36 in. 4¢  
Rolled Blind Hinges, Nos. 32 and 34..... 50¢  
Rolled Plate..... 70¢  
Screw Hook..... 6 to 12 in. 2¢  
and Strap..... 14 to 20 in. 2¢  
22 to 36 in. 1 1/2¢

## Hoes—

### Eye—

D. & H. Scovill..... 20¢  
Scovill and Oval Pattern..... 60¢  
Gr. 9..... 75¢

### Handled—

Field and Garden..... 80¢  
Ladies', Boys', Toy and Onion..... 80¢  
Street and Mortar..... 75¢  
Cotton..... 80¢  
Planters'..... 80¢  
Weeding..... 75¢

Ft. Madison Crucible Garden Hoe 75¢  
Ft. Madison Crescent Cultivator Hoe, per doz. \$3.50..... 30¢  
Ft. Madison Mattock Hoe, 1/2 doz. \$3.75..... 30¢  
Ft. Madison Sprouting Hoe, 1/2 doz. \$4.50..... 30¢  
Ft. Madison Dixie Tobacco Hoe..... 80¢  
Warren Hoes..... 80¢

## Hog Rings and Ringers—

See Rings and Ringers.

## Hoisting Apparatus—

See Machines, Hoisting.

## Hollow Ware—

See Ware, Hollow.

## Holders—Bag—

Sensible Bag and Twine..... 50¢

## Bit—

Angular, 1/2 doz. \$24.00..... 45¢  
Extension..... 45¢  
Barber's, 1/2 doz. \$15.00..... 45¢

## File and Tool—

Nicholson File Holders and File Handles..... 33¢

## Hooks—

### Cast Iron—

Bird Cage, Reading..... 60¢  
Bird Cage, Sargent's List..... 70¢  
Clothes Line, Sargent's List..... 50¢  
Clothes Line, Stowell's..... 70¢  
Clothes Line, Reading List..... 65¢  
Coat and Hat, Stowell's..... 70¢  
Coat and Hat, Reading..... 60¢  
Coat and Hat, Sargent's List..... 50¢  
Coat and Hat, Wroughtville list..... 70¢  
Harness, Reading List..... 70¢

### Wire—

Atlas, Coat and Hat..... 50¢  
Belt..... 80¢  
Buffalo Belt Fasteners..... 40¢  
Wire Coat and Hat..... 60¢  
Acme..... 60¢  
B. B..... 75¢  
Gem..... 70¢  
Bright Wire Goods—See Wire.

### Wrought Iron—

Cotton..... 1/2 doz. \$1.25  
Picture, T. & S. Mfg. Co..... 75¢  
Tassel, T. & S. Mfg. Co..... 50¢  
Wrought Staples, Hooks, &c.—See Wrought Goods.

### Miscellaneous—

Bush, Light, 1/2 doz. \$5.00; Medium, \$5.50; Heavy, \$6.00  
Covert's Self Locking Gate and Door \$17.30..... 60¢  
Crown Picture..... 60¢  
Fish Hooks, American..... 60¢  
Grass, No. 2, \$1.65; No. 3, \$1.80; No. 4..... 82.00  
Potato and Manure..... 75¢  
Hooks and Eyes—Brass..... 70¢  
Hooks and Eyes—Malleable Iron..... 75¢  
Whiffletree, 1/2 doz. \$4.50..... 45¢  
Bench Hooks—See Bench Stops.  
Corn Hooks—See Knives, Corn.

### Horse Nails—See Nails, Horse.

### Horseshoes—

See Shoes, Horse.

### Hose, Rubber—

Garden Hose, 1/2-inch:  
Competition..... 1/2 ft. 4¢  
3-ply Standard..... 1/2 ft. 5¢  
4-ply Standard..... 1/2 ft. 6¢  
3-ply extra..... 1/2 ft. 8¢  
4-ply extra..... 1/2 ft. 8¢  
High Grade..... 1/2 ft. 8¢  
Cotton Garden, 1/2 in., coupled: 1/2 ft. 7¢  
Fair quality..... 1/2 ft. 8¢  
Good quality..... 1/2 ft. 8¢

## Irons—

### Sad—

From 4 to 10..... 2¢  
R. B. Sad Irons..... 2¢  
Chinese Laundry..... 3¢  
Chinese Sad..... 3¢  
Crown Improved, Pol., 1/2 doz. \$3.00..... 30¢  
Troy Pol. Irons..... 30¢  
Mrs. Potts, per set: 60 65 59¢  
New England Pressing..... 65¢  
Sensible Sad Irons, rol., 1/2 doz. \$3.50; Nickel, \$7.00.

### Soldering—

Soldering Coppers..... 17¢  
Covert Mfg. Co..... 35¢

### Pinking—

Pinking Irons..... 1/2 doz. 55¢

## Jack Screws—See Screws.

## Jacks, Wagon—

Covert Mfg. Co., Steel..... 45¢  
Daisy, 1/2 doz. \$12.00..... 70¢  
Lockport..... 40¢  
Victor, 1/2 doz. \$20.00..... 60¢  
Lane's Steel..... 30¢

## Kettles—

Brass, Spun, Plain, list Jan. 10, '99 17¢  
Enameled and Tea—See Ware, Hollow.

## Knife Sharpeners—

See Sharpeners, Knife.

## Knives—

### Butcher, Shoe, &c.—

Dick's Butcher Knives..... 40¢  
Foster Bros. Butcher, &c..... 30¢  
Nichols' Butcher Knives..... 50¢  
Table and Pocket Cutlery and John Wilson's Butcher Knives—Net prices.  
Hay and Straw—See Hay Knives.

### Corn—

Ft. Madison Cut-Easy, 1/2 doz. \$3.00

### Drawing—

Standard 1st..... 75¢  
Adjustable Handle..... 25¢  
Bradley's..... 25¢  
Douglass..... 75¢  
Watrous..... 30¢  
L. & J. White..... 20¢  
Cauley's Folding..... 50¢

### Hay and Straw—

Blizzard..... 85¢  
Iwan's Sickle Edge..... 80¢  
Lightning, from Jobbers..... 50¢

### Mincing—

Buffalo Adjustable, 1/2 doz. \$3.00..... 40¢  
Knapp & Cowles..... 60¢  
Smith's, 1/2 doz., Single, \$2; Double, \$3..... 45¢

### Miscellaneous—

Farriers'..... 1/2 doz. \$2.00; 3.00

### Knobs—

Base, 2 1/2-in., Birch, Rubber tip, 1/2 gr. \$1.25; 1.40  
Bardsley's Wood Door, Shutter, &c..... 15¢  
Carriage, Jap., 1/2 gr. 80¢  
Door, Mineral..... 60¢  
Door, Por. Jap'd..... 65¢  
Door, Por. Nickel..... 70¢  
Drawer, Porcelain..... 60¢  
Picture, Sargent's..... 70¢  
Shutter, Porcelain..... 70¢  
Yale & Towne Wood, list Dec., '85..... 40¢

### Ladies—Melting—

P. S. & W..... 35¢  
Reading..... 50¢  
Sargent's..... 60¢

### Lanterns—Tubular—

Regular Tubular..... 1/2 doz. \$7.00; 40¢  
Side Lift Tubular..... 10¢  
Square Lift Tubular..... 10¢

### Bull's Eye Police—

2 1/2-inch flash light..... 1/2 doz. \$4.00  
3-inch flash light..... 1/2 doz. \$4.50  
2 1/2-inch regular..... 1/2 doz. \$3.60  
3-inch regular..... 1/2 doz. \$3.90

### Lawn Mowers—

See Mowers, Lawn.

### Leaders, Cattle—

Covert Mfg. Co..... 45¢  
Peck, Stow & W. Co..... 60¢  
Sargent's..... 70¢

### Lemon Squeezers—

See Squeezers, Lemon.

### Lifters, Transom—

Excelsior..... 60¢  
Payson's..... 60¢  
Solid Grip Nos. 303 and 304, 1/2 doz. \$1.00  
Other sizes..... 70¢  
Shaw's..... 60¢

### Lines—

Ossawan Mills:  
Crown Solid Braided Chalk..... 33¢  
Mason's, No. 9 to No. 3..... 33¢  
Silver Lake Braided Chalk, No. 9, \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50; 1/2 gr. 30¢  
Wire Clothes, Nos. 18 19 20 100 feet..... \$2.25 2.00 1.75 75 feet..... \$1.15

### Locks, &c.—Cabinet—

Cabinet Locks..... 45¢

**Door Locks, Latches, &c.—**

[Net prices are very often made on these goods.]

Plate.....33½¢  
Reading.....60¢@60¢10¢  
R. & E. Mfg. Co.....60¢10¢70¢  
Sargent & Co.....30¢10¢60¢10¢10¢  
S. B. & Co., Locks, Knobs, &c. 40¢40¢55¢

**Elevator—**

Stowell's.....33½¢

**Padlocks—**

Wrought Iron, list Dec. 3, '97. 75¢10¢80¢  
Dog Collar, S. B. Co.....40¢  
E. T. Frail:  
Cast Iron, Scandinavian.....90¢40¢  
Mal. Iron, 120 line.....90¢10¢  
Mal. Iron, 110 and 125 line.....85¢  
All others.....50¢55¢  
Scandinavian.....90¢40¢90¢40¢10¢  
S. B. & Co.....40¢

**Sash, &c.—**

Fitch's Patent.....70¢10¢  
Ives' Patent.....60¢5¢2¢  
Payson's Perfect.....70¢  
Payson's Signal.....70¢10¢  
Reading.....60¢10¢10¢70¢

**Machines—****Boring—**

Without Augers.  
Upright. Angular.

Boss, Carpenters' \$3.50  
Boss, Ship Bldrs' 3.75  
Douglas 2.50 \$3.00  
Jennings 2.50 3.00  
Millers' Falls 5.75  
Snell's, Rice's Pat. 2.50 2.75

**Fluting—**

Crown Jewel, 6 in.....\$2.50@2.75

**Hoisting—**

Moore's Anti-Friction Differential Pulley Block.....30¢  
Moore's Hand Hoist, with Lock Brake 30¢  
Maris & Beckley (Teal Patent).....30¢  
See also Blocks.

**Washing—**

Wayne American, No. 2, ½ doz. \$27.50  
Western Star, No. 2, ½ doz. 27.50  
Western Star, No. 3, ½ doz. 30.00  
St. Louis, No. 41, ½ doz. 35.00

**Maillets—**

Hickory.....50¢50¢10¢  
Lignumvitæ.....50¢50¢10¢  
Tanners', Hickory and Applewood, ½ doz. 55¢60¢  
Fiber Head, Stearns'.....25¢

**Mattocks—**

Standard List.....75¢10¢

**Measures—**

Peck and Half Peck, See *Wares, Standard and Fiber*.

**Meat Cutters—**

See *Cutters, Meat*.

**Menders—**

Centaur Harness Menders, ½ doz. \$0.00  
Jones' Hose Menders, ½ doz. ½ in. 40¢  
½ in. 50¢  
Victor Complete Hose Menders, ½ doz. \$3.50

**Milk Cans—See Cans, Milk.****Mills—Coffee—**

Box and Side, list, Jan. 1, '88.....60¢10¢60¢10¢10¢  
Net prices are often made on some goods which are lower than above discounts.  
Enterprise Mfg. Co., list Jan. 17, '93.....30¢  
National, list Jan. 1, '94.....30¢  
Parker's Columbia and Victor.....60¢10¢  
Parker's Upright.....30¢10¢40¢  
Swift, Lane Bros.....33½¢

**Mincing Knives—**

See *Knives, Mincing*.

**Molasses Gates—**

See *Gates, Molasses*.

**Money Drawers—**

See *Drawers, Money*.

**Mowers, Lawn—**

Net prices are very frequently quoted.  
10 12 14 16-inch  
Cheap.....\$1.05 \$1.70 \$1.75 \$1.80  
Medium.....2.50 2.75 3.00 3.25  
High Grade.....3.50 3.75 4.00 4.25  
Pennsylvania and Continental.....60¢10¢10¢

**Philadelphia:**

All Styles except A and E.....70¢10¢  
Style A, all Steel.....60¢10¢  
Style E, Low Wheel.....60¢10¢  
Style E, High Wheel.....70¢10¢

**Muzzles—**

Safety.....\$ gr. \$12.00@12.50

**Nails—**

Cut and Wire. See *Trade Report*.  
Wire Nails and Brads, Papered. List, May 1, '92.....85¢ @5¢10¢5¢  
Hungarian, Finishing, Upholsterers', &c. See *Tacks*.

**Horse—**

No. 6 7 8 9 10  
A. C.....25¢ 23¢ 22¢ 21¢ 21¢  
American.....9¢ 9¢ 9¢ 9¢ 9¢  
Ausable.....25¢ 26¢ 25¢ 24¢ 23¢  
Capewell.....19¢ 18¢ 17¢ 16¢ 16¢10¢5¢  
C. B. K.....25¢ 23¢ 22¢ 21¢ 21¢  
Chapman.....28¢ 26¢ 25¢ 24¢ 23¢  
Clinton Fin.....19¢ 17¢ 16¢ 15¢ 14¢30¢5¢  
Maud S.....25¢ 23¢ 22¢ 21¢ 21¢  
Neponset.....23¢ 21¢ 20¢ 19¢ 18¢  
Putnam.....23¢ 21¢ 20¢ 19¢ 18¢33¢4¢  
Vulcan.....23¢ 21¢ 20¢ 19¢ 18¢

**Picture—**

Brass Head, Combination list.....50¢10¢  
Brass Head, Sargent's list.....50¢10¢  
Porcelain Head, Combination list 40¢10¢  
Porcelain Head, Sargent's list.....50¢10¢  
Crown.....50¢10¢  
Niles' Patent.....40¢

**Nippers, See Pliers and Nippers.****Nut Crackers—**

See *Crackers, Nut*.

**Nuts—List Dec. 18, 1888.**

Cold Punched. Off list.  
Mfrs. or U. S. Standard.  
Hexagon, plain.....\$6.50  
Square, plain.....6.10  
Square, C. T. & R.....6.20  
Hexagon, C. T. & R.....7.10  
Hot Pressed.  
Mfrs., U. S. or Nar. Gauge Standard.  
Square.....\$6.40  
Hexagon.....7.20

**Oakum—**

Best or Government.....\$ 54¢  
Navy.....\$ 44¢  
U. S. Navy.....\$ 54¢  
Plumbers' Spun Navy.....\$ 24¢  
F. O. B. New York. In carload lots 4¢

**Oil Tanks—See Tanks, Oil.****Oilers—**

Brass and Copper.....50¢10¢60¢  
Zinc and Tin.....75¢75¢10¢  
Malleable, Hammers' Improved, No. 1, \$3.00; No. 2, \$4; No. 3, \$4.40 ½ doz. 20¢  
Malleable, Hammers' Old Pattern, same list.....50¢10¢  
Wilnot & Hobbs Mfg. Co.....70¢10¢75¢

**Openers, Can—**

French.....\$ doz. 35¢  
Iron Handle.....\$ doz. 60¢75¢  
Kio-dike, C. Rogers & Bros.....\$ gr. \$0.50  
National, ½ gr.....\$1.75@2.00  
Sardine Scissors.....\$ doz. \$2.00@2.10  
Sprague, Iron or Wood Handle.....\$ doz. 40¢45¢  
Stowell's.....\$ doz. 75¢10¢

**Streeter's:**

Sensible, Japanned.....\$ gr. \$3.50  
Sensible, Nickel.....\$ gr. \$5.00  
Surprise.....\$ gr. \$2.50  
New Sprague, Metallic Handle \$ gr. \$3.50  
New Sprague, Wood Handle \$ gr. \$4.50

**Packing—****Rubber—**

Standard, fair quality.....70¢10¢75¢  
Inferior quality.....75¢10¢80¢  
Extra.....80¢5¢60¢10¢5¢  
Jenkins' Standard, ½ B 80¢.....25¢25¢5¢

**Miscellaneous—**

American Packing.....\$¢ @ 10¢ ½ B  
Cotton Packing.....13¢ @ 14¢ ½ B  
Italian Packing.....10½¢ @ 11½¢ ½ B  
Jute.....5¢ @ 5½¢ ½ B  
Russia Packing.....12¢ @ 13¢ ½ B

**Pails—****Creamery—**

S. S. & Co., with gauges. No 1 \$5.25;  
No. 2, \$5.50 ½ doz.....15¢

**Galvanized—**

Inch.....10 12 14  
Water, Standard, ½ gr.....\$16.50 \$18.50 \$20.50  
Water, Competition, ½ gr.....\$14.00 \$16.00 \$18.00  
Fire, ½ gr.....\$19.00 \$22.50 \$25.50  
Well, ½ gr.....\$21.00 \$22.00 \$25.00

**Pans—****Dripping—**

Large Sizes.....\$ 3¢@34¢  
Small Sizes.....\$ 4¢ @4½¢

**Fry—**

Standard List.....80¢80¢10¢  
No.....0 1 2 3 4 5 6 7 8  
½ doz.....\$3.00 \$3.75 \$4.25 \$4.75 \$5.25  
No.....5 6 7 8  
½ doz.....\$6.00 \$7.00 \$8.00 \$9.00  
Acme Fry Pans.....75¢75¢10¢

**Roasting and Baking—**

Columbian, S. S. & Co., Nos. 5, ½ doz., \$10; 10, \$11.50; 20, \$13; 30, \$15.....60¢  
Simplex No. 08, ½ doz. \$7.00; No. 09, \$8.50.....60¢

**Paper—****Building Paper—**

Per roll  
Rosa Sized Sheathing: 500 sq. ft. \$0.35@0.40  
Light wt., 20 sq. ft. to lb.....\$0.55@0.60  
Medium wt., 12 sq. ft. to lb.....\$0.55@0.60  
Heavy wt., extra quality.....\$0.95@1.05  
Barrett's Water Proof Sheathing.....\$1.35@1.75  
Medium Grades Water Proof Sheathing.....\$0.80 to 1.25  
Deafening Felt, 9, 8 and 4½ sq. ft. to lb., ½ ton.....\$42.50

**Tarred Paper.**

1 ply (roll 300 sq. ft.), ½ ton.....\$35@37  
2 ply, heavy, ½ roll 100 sq. ft.....90¢  
2 ply, light, ½ roll 100 sq. ft.....75¢  
3 ply, heavy, ½ roll 100 sq. ft.....\$1.20  
3 ply, light, ½ roll 100 sq. ft.....\$1.00

**Sand and Emery—**

List April 19, 1886.....50¢10¢5¢60¢

**Parers—****Apple—**

Advance.....\$ doz. \$4.50  
Baldwin.....\$ doz. \$5.00  
Bonanza.....each \$5.00  
Dandy.....each \$7.50  
Eureka, 1888.....each \$16.00  
Family Bay State.....\$ doz. \$12.00  
Improved Bay State ½ doz. \$27.00@30.00  
New Lightning.....\$ doz. \$5.50  
Penn.....\$ doz. \$3.75  
Perfection.....\$ doz. \$4.00  
Reading 75.....\$ doz. \$4.00  
Reading 75.....\$ doz. \$7.00  
Turn Table.....\$ doz. \$4.50  
White Mountain.....\$ doz. \$4.00

**Potato—**

Saratoga.....\$ doz. \$5.50  
White Mountain.....\$ doz. \$4.50

**Paris Green—**

Arsenic kegs or casks.....\$ 12¢  
Kegs 0 100 to 175 pounds.....\$ 12½¢  
Kits of 14, 25 and 56 pounds.....\$ 13½¢  
Paper boxes 2 to 5 pounds.....\$ 13½¢  
Paper boxes 1 pound.....\$ 14¢  
Paper boxes ½ pound.....\$ 15¢  
Paper boxes ¼ pound.....\$ 16¢

**Picks and Mattocks—**

Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00.....75¢10¢

**Pinking Irons—**

See *Iron, Pinking*.

**Pins—****Bow—**

1½-inch.....\$ gr. \$4.50@5.00  
2-inch.....\$ gr. \$5.00@5.50

**Escutcheon—**

Brass.....70¢70¢10¢  
Iron, list Nov. 11, '85.....60¢60¢5¢

**Pipe, Cast Iron Soil—**

Factory Shipments.  
Standard.....75¢10¢75¢10¢5¢  
Extra Heavy.....80¢80¢5¢  
Fittings.....80¢5¢80¢10¢

**Pipe, Wrought—**

Factory Shipments.  
List Jan. 29, '95.  
1½ and under Plain, 55¢ extra five 10's  
1½ and under, Galv.....45¢ and 75¢; less 1½ and over, Plain.....65¢ than carloads  
1½ and over, Galv.....50¢ extra five 10's and 2½¢  
Cold Drawn Seamless Steel Tubing.....60¢

**Planes and Plane Irons—****Wood Planes—**

Molding.....45¢@45¢5¢  
Bench, First quality.....50¢5¢50¢10¢  
Bench, Second quality.....50¢10¢5¢60¢  
Bailey's (Stanley R. & L. Co) 50¢10¢10¢50¢10¢10¢10¢

**Iron Planes—**

Bailey's (Stanley R. & L. Co) 50¢10¢10¢50¢10¢10¢10¢  
Chaplin's Iron Planes.....50¢10¢  
Miscellaneous Planes (Stanley R. & L. Co).....25¢10¢10¢25¢10¢10¢10¢  
Sargent's.....60¢10¢10¢70¢

**Plane Irons—**

Standard List.....30¢10¢30¢10¢10¢  
Auburn Thistle.....30¢10¢30¢10¢10¢  
Buck Bros.....30¢  
Butcher's.....\$5.00@5.25 to E  
Stanley R. & L. Co.....50¢10¢50¢10¢10¢  
L. & J. J. White.....20¢5¢25¢

**Plates—**

Felco.....\$ 6¢@6½¢  
Self-Sealing Pie Plates (S. S. & Co.), ½ doz. \$2.00.....50¢

**Pliers and Nippers—**

Acme Nippers.....50¢  
Button's.....70¢10¢70¢10¢5¢  
Cronk's Patent Pliers.....60¢  
Cronk's Stub's Pat. Pliers.....50¢10¢

**Cronk's Button Pattern.....70¢**

Cronk's Combs, Cutting and Gas Pliers, ½ doz. \$20.00, 60¢

**Gas Pliers, ½ doz.:**

Best.....7-in. 8-in. 9-in. 10-in.  
Good.....\$5.25 \$5.00 \$5.50 \$6.50  
Heller's Farriers' Pincers and Tools.....40¢40¢  
Morrill's Parallel, ½ doz. \$12.00.....30¢5¢  
P. S. & W. Cast Steel.....50¢50¢5¢  
P. S. & W. Timmers' Cutting Nippers, add 6¢.....10¢

**Utica Drop Forge & Tool Co.:**

Combination Pliers.....40¢5¢  
Side Cutting Pliers.....40¢5¢  
Hall Patent Nipper.....40¢5¢  
Round and Flat Nose Pliers.....40¢5¢  
End Cutting Pliers.....40¢5¢  
Royal Blue.....40¢5¢  
Glass Pliers.....40¢5¢  
Burner Pliers.....40¢5¢

**Plumbs and Levels—**

Plumbs and Levels.....75¢10¢10¢80¢10¢  
Cook's.....40¢10¢10¢40¢10¢10¢5¢  
Pocket Levels.....75¢10¢10¢75¢10¢  
Stanley R. & L. Co. 70¢10¢10¢70¢10¢10¢10¢  
Stanley's Duplex.....25¢10¢25¢10¢10¢  
Woods' Extension.....33½¢

**Poachers, Egg—**

Buffalo Steam Egg Poachers, ½ doz., No. 1, \$4.00; No. 2, \$9.00; No. 3, \$9.00; No. 4, \$12.00.....50¢

**Pokes, Animal—**

Bishop's American.....\$ doz. \$2.75  
Bishop's L. X. L.....\$ doz. \$5.50  
Bishop's Steel Monarch.....\$ doz. \$4.25  
Bishop's Pioneer.....\$ doz. \$3.25  
Ironclad, Sunbury, with strap, ½ doz. \$4.25  
Ironclad, Sunbury, with snap, ½ doz. \$4.00  
Metallic Horse Pokes.....\$ doz. \$5.00

**Police Goods—**

Bean's.....25¢  
Tower's.....25¢

**Polish—Metal—**

Prestoline Liquid, No. 1 (½ pt.), ½ doz. \$3.00; No. 2 (1 qt.), \$9.72.....40¢  
Prestoline Paste.....33½¢40¢  
U. S. Metal Polish Paste, 3 oz. boxes, ½ doz. 50¢; ½ gr. \$4.50; ½ doz. boxes, ½ doz. \$1.25; 1 doz. boxes, ½ doz. \$2.25; U. S. Liquid, 8 oz. cans, ½ doz. \$1.25; ½ gr. \$12.00.  
Reckers' Friend Metal Polish, ½ doz. \$1.75; ½ gr. \$18.00.  
Wynn's White Silk, ½ pt. cans, ½ doz. \$1.50

**Stove—**

Joseph Dixon's, ½ gr. \$5.75.....10¢  
Dixon's Plumbago.....\$ 8¢  
Firestone.....\$ gr. \$2.50  
Gem, ½ gr. \$4.50.....10¢  
Japanese.....\$ gr. \$3.50  
Jet Black.....\$ gr. \$3.50  
Wynn's Black Silk, 5 lb. pail.....\$ 12¢  
Wynn's Black Silk, ½ lb. box, ½ doz. \$1.00  
Wynn's Black Silk, 5 oz. box, ½ doz. \$1.75  
Wynn's Black Silk, 8 oz. liq., ½ doz. \$1.00

**Poppers, Corn—**

Round or Square.  
1 qt.....\$ doz. 60¢; ½ gr. \$6.00  
1½ qt.....\$ doz. 70¢; ½ gr. 7.50  
2 qt.....\$ doz. \$1.10; ½ gr. \$1.50  
Quincy Corn Popper, 1 qt., ½ gr. \$17.00; 2 qt., \$22.00.

**Post Hole and Tree Augers and Diggers—**

See also *Diggers, Post Hole, &c.*

**Potato Parers—**

See *Parers, Potato*.

**Pots—****Glue—**

Enameled.....40¢10¢30¢

Tinned.....40¢10¢30¢

**Powder—**

In Canisters:  
Duck, 1 lb each.....45¢  
Fine Sporting, 1 lb each.....75¢  
Rifle, ½ lb each.....15¢  
Rifle, 1 lb each.....25¢  
In Kegs:  
Duck, 6½ lb kegs.....\$2.25  
Duck, 12½ lb kegs.....\$4.25  
Duck, 25 lb kegs.....\$8.00  
Rifle, 6½ lb kegs.....\$1.25  
Rifle, 12½ lb kegs.....\$2.25  
Rifle, 25 lb kegs.....\$4.00

King's Smokeless:  
Keg (25 lb bulk).....\$20.00  
Half Keg (12½ lb bulk).....\$10.25  
Quarter Keg (6½ lb bulk).....\$5.25  
Canister (1 lb bulk).....\$0.90  
Case, 1 lb Canisters (50 lb bulk).....\$45.00  
Half Case, 1 lb Canisters (25 lb bulk).....\$22.75  
King's Semi-Smokeless:  
Keg (25 lb bulk).....\$16.00  
Half Keg (12½ lb bulk).....\$8.25  
Quarter Keg (6½ lb bulk).....\$4.25  
One Pound Can, bulk.....\$0.50

**Presses—****Fruit and Jelly—**

Enterprise Mfg. Co.....25¢30¢

**Pruning Hooks and Shears—See Shears.****Pullers Nail—**

Crown, ½ doz. \$18.00.....50¢  
Crown, 1 doz. \$15.00.....50¢  
Giant, No. 1, ½ doz. \$18.00; No. 2, \$18.50; No. 3, \$15.....40¢  
National, ½ doz. \$24.00.....40¢



Pelican, 1/2 doz. \$0.00.....15&10  
Scranton, No. 1 and 2, 1/2 doz. ....\$10.00  
Scranton, No. 3, 1/2 doz. ....\$9.50

**Pulleys—**

Hay Fork, Swivel or Solid Eye, 1/2 doz. \$1.50  
Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, 1/2 doz. \$12.00.....40¢  
Hay Fork, Stearns' No. 15 & 25 1/2 doz. \$1.75  
Hay Fork, Stearns' No. 35 & 45 1/2 doz. \$2.00  
Hay Fork, Stearns' Nos. 56 & 66.....\$2.25  
Hot House, Awning, &c.....\$60&60 1/2  
Japanned Clothes Line.....\$60&60 1/2  
Japanned Screw.....\$70&10&10 1/2  
Stowell's Ceiling or End, Anti-Friction 40¢  
Stowell's Dumb Waiter, Anti-Friction 50¢  
Stowell's Electric Light.....33¢  
Stowell's Slide, Anti-Friction.....50¢  
Sash (Auger Mortise):  
Common Sense, 1 1/2 in., 1/2 doz., 18¢;  
2 in., 20¢.  
Empire.....1 1/2 in., 17¢; 2 in., 19¢  
I. C.....1 1/2 in., 15¢; 2 in., 17¢  
Ideal No. 13.....1 1/2 in., 15¢; 2 in., 17¢  
Improved.....1 1/2 in., 17¢; 2 in., 19¢  
Niagara.....1 1/2 in., 16¢; 2 in., 17¢  
No. 26, Troy.....1 1/2 in., 15¢; 2 in., 17¢  
Star.....1 1/2 in., 16¢; 2 in., 17¢  
Acme.....1 1/2 in., 18¢; 2 in., 19¢  
Tackle Blocks—See Blocks.

**Pumps—**

Clatam, Best Makers.....70&75¢  
Pitcher Spout, Best Makers.....75&10&30¢  
Pitcher Spout, Cheaper Goods.....80&5&30&10¢  
Flint & Wallings Fast Mail.....85¢  
Myer's Pumps, low list.....55¢  
Pump Leathers, all sizes.....1/2 gr. \$0.00  
Contractors' Rubber Diaphragm Non-chokable, E. & L. Block Co.....20¢

**Punches—**

Bemis & Call Co.'s Cast Steel Drive, 50&55¢  
Bemis & Call Co.'s Check.....55¢  
Bemis & Call Co.'s Spring.....80&85¢  
Bemis & Call Co.'s Springfield Socket.....65¢  
Niagara Hollow Punches.....45¢  
Niagara Solid Punches.....55¢  
Saddlers' or Drive, good.....1/2 doz. 80¢  
Spring, good quality, 1/2 doz. \$1.70&1.80  
Steel Screw, B. & K. Mfg. Co.....15¢  
Tinnars' Hollow, P. S. & W. Co., 20&25¢  
Tinnars' Solid, P. S. & W. Co., 20&25¢  
\$1.44.....55¢

**Rail—**

Barn Door, 40.—  
Barn Door, Light.....1 in. 2.50  
100 feet.....\$1.30 1.35 2.30  
B. D., for N. E. Hangers:  
Small, Med. Large.....\$1.60 2.00 2.50  
Cronk's Double Brace Steel Rail, 3¢  
Foot.....\$2.40  
Lanes' O. N. T., 100 ft.....\$2.40  
Lanes' Standard, 100 ft.....3¢  
McKinney's None Better.....ft. 2¢  
McKinney's Standard.....ft. 3¢  
Moore's, Wrt. Brack, 100 ft.....ft. 3¢  
Sliding Door, Iron Painted.....ft. 2¢  
Sliding Door, Iron Painted.....ft. 2¢  
Sliding Door, Wrt. Brack, 114 in. 36¢  
80&10&40&5¢  
Stowell's Steel Rail.....\$5&10¢  
Terry's Steel Rail.....ft. 3¢

**Rakes—**

Cast Steel, Asso. List.....77¢&2¢  
Malleable.....70&10¢  
Buffalo Lawn and Garden, 40¢  
Fort Madison Red Head Lawn.....\$3.00  
Fort Madison Blue Head Lawn.....\$2.25

**Rasps, Horse—**

New Nicholson Horse Rasp.....70&10¢  
See also Files.

**Razor Straps—**

See Straps, Razor.

**Reels—**

Clothes Line—  
Stearns'.....33¢&10¢

**Fishing—**

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Popolo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25¢  
Hendryx Single Action Series, 102 P and PN, 202 P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 30404P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor, 50¢  
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 02904P, 0924 and 0924N, 5009N and PN.....40&10¢

**Registers—**

List Dec. 20, '97:  
Japanned.....40&10¢  
Nickel Plate.....40&10¢  
Bronze Plate.....40¢  
Imitation Bronze.....40¢

**Rings and Rings—**

Bull Rings—  
Peck, Stow & W. Co.'s.....60&60 1/2  
Sargent's.....80&80 1/2

**Hog Rings and Rings—**

Blair's Rings.....1/2 gr. \$3.40&3.50  
Blair's Rings.....1/2 gr. \$5.00&5.10  
Brown's Rings.....1/2 gr. \$4.00&4.10  
Brown's Rings.....1/2 gr. \$5.00&5.10  
Hill's Rings.....1/2 gr. boxes, \$2.90&3.00  
Hill's Rings.....1/2 gr. \$5.00&5.10  
Perfect Rings.....1/2 gr. \$7.00&7.50  
Perfect Rings, 1/2 doz.....75¢

**Rivets and Burrs—**

Copper.....50&50 1/2  
Norway Quality or Soft Steel:  
Tinnars'.....80&80 1/2  
Miscellaneous.....80&80 1/2

**Rivet Sets—See Sets.****Roasting and Baking Pans—See Pans, Roasting and Baking.****Rods—**

Stair, Black Walnut.....1/2 doz. 40¢  
Stair, Brass, Oval or Hollow.....50&50 1/2

**Rollers—**

Acme Stowell's Anti-Friction.....50&10¢  
Barn Door, Sargent's list, 60&10&10 1/2  
Lane's, Stay.....33¢&25¢  
Stowell's Barn Door Stay.....1/2 doz. \$1.00

**Rope—**

The following prices are f.o.b. New York factory; terms, 1 1/2% for cash.  
Manila, 7-16 inch and larger.....7¢&7 1/2¢  
Manila, 1/4 and 5-16 inch.....8¢&8 1/2¢  
Manila, Tarred Rope, 15 thread.....7 1/2¢&7 3/4¢  
Manila Hay Rope Medium.....7 1/2¢&7 3/4¢  
Sisal.....7-16 in. and larger.....7¢&7 1/2¢  
Sisal.....3/4 in. and larger.....7 1/2¢&8¢  
Sisal, Hay Rope, 2 to 10 ply.....7¢&7 1/2¢  
Sisal, Medium Lath Yarn.....6¢&6 1/2¢  
Cotton Rope:  
Best, 1 1/2 in. and larger.....13¢&14¢  
Medium, 1 1/2 in. and larger.....10¢&12¢  
Common, 1 1/2 in. and larger.....8¢&10¢  
Jute Rope.....5¢&6¢

**Wire Rope—**

List Sept. 1, '94. All kinds. 20&2 1/2&2 cash

**Rules—**

Boxwood.....80&10&10 1/2&10 1/2  
Ivory.....40&10&10 1/2&10 1/2  
Lufkin's Steel.....50&10¢  
Lufkin's Lumber.....50&10¢  
Stanley R. & L. Co.:  
Boxwood.....80&10&10 1/2&10 1/2  
Ivory.....40&10&10 1/2&10 1/2

**Sad Irons—See Irons, Sad, Sand and Emery Paper and Cloth—See Paper and Cloth.****Sash Cords—See Cord, Sash.****Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

**Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.****Saws—**

NOTE—Extra 5&10% often given.  
Atkins' Circular.....50¢  
Atkins' Band.....50¢  
Atkins' Cross Cut.....50¢  
Atkins' Mulay, Mill and Drag.....50¢  
Atkins' One-Man Saw.....40&10¢  
Atkins' Wood Saws.....40&10¢  
Atkins' Hand, Compass, &c.....40¢  
Diaton's Circular.....45¢&50¢  
Diaton's Cross Cut, list Jan. 1, '93, 40&10¢  
Diaton's Hand.....25¢  
E. Jennings & Co.....25¢&30¢  
Peace Circular and Mill.....45&10¢  
Peace Cross Cuts, list Jan. 1, '93, 45&10¢  
Peace Hand, Panel and Rip.....25&10¢  
Richardson's Circular and Mill.....45&10¢  
Richardson's X Cuts, list Jan. 1, '93, 45&10¢  
Richardson's Hand, &c.....25&10¢  
Simonds' Circular Saws.....45¢&50¢  
Simonds' Crescent Ground Cross Cut Saws.....35¢  
Simonds' One-Man Cross Cuts.....40&10¢  
Simonds' Gang Mill, Malay and Drag Saws.....45¢&45¢  
Wheeler, Madden & Clemson Mfg. Co.:  
Cross Cuts, list Jan. 1, '93, 45&10¢  
Hand, Panel and Rip.....30&10¢  
Woodrough & McParlin:  
Cross Cuts, list Jan. 1, '93, 45&10¢  
Hand, Panel and Rip.....25&10¢

**Hack Saws—**

Griffin's complete.....50&50 1/2  
Griffin's Hack Saw Blades.....50&50 1/2  
Star Hack Saws and Blades.....15&10¢

**Scroll—**

Barnes' No. 7, \$15.....25¢  
Barnes' Velocipede Scroll Saw, \$15.....20¢  
Barnes' Scroll Saw Blades.....40¢  
Lester, complete, \$10.00.....15&10¢  
Rogers, complete \$4.00.....15&10¢

**Saw Frames—**

See Frames, Saw.

**Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Scale Beams—**

See Beams, Scale.

**Scales—**

Chatillon's Eureka.....25¢  
Chatillon's Favorite.....40¢  
Chatillon's Grocers' Trip Scales.....50¢  
Family Turnbull's.....30&30 1/2  
Hatch, Counter, No. 171, good quality, 1/2 doz. \$17.00&18.00  
Hatch, Tea, No. 181.....1/2 doz. \$5.75&6.00  
Pelouse Scales—Family, Candy, Grocers and Postal.....39¢  
Union Platform, Plain.....2.10  
Union Platform, Striped.....\$4.15&2.25  
"The Standard" Portables.....45¢&50¢  
"The Standard" R. R. and Wagon.....60¢

**Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.) \$8.00.....40¢  
Box, 1 Handle.....1/2 doz. \$2.00  
Box, 2 Handle.....1/2 doz. \$3.00&4.00  
Foot.....50¢&60¢  
Ship, No. 1, 1/2 doz., \$3.50; No. 2, \$2.25  
Ship, R. I. Tool Co.....10¢  
Tatum's Box.....25&10¢

**Screen Window and Door Frames—See Frames.****Screw Drivers—See Drivers, Screw.****Screws—****Bench and Hand—**

Bench, Iron.....1/2 doz. 1 in. \$2.50;  
1 1/2, \$3.75; 1 3/4, \$3.25  
Bench, Wood, Beech.....1/2 doz. \$2.00&2.20  
Hand, Wood.....30&10&40&10¢  
Hand, Grand Rapids.....35¢

**Coach, Lag and Hand Rail—**

Lag, Common Point, list Jan. 30, '95.....85¢&85 1/2¢  
Coach and Lag, Gimlet Point, list Jan. 30, '95.....85¢&85 1/2¢  
Hand Rail, list Jan. 1, 1881.....82¢

**Jack Screws—**

Millers' Falls.....50&10&10 1/2  
Millers' Falls, Roller.....50&10¢  
P. S. & W.....40&40 1/2  
Sargent.....70&10&10 1/2  
Stearns'.....40&10¢  
Tatum's.....25&10¢

**Machine—**

List Jan. 1, '93.  
Flat Head, Iron or Brass.....60¢  
Round Head, Iron or Brass.....60¢

**Set and Cap—**

Set (Iron or Steel).....70&10¢  
Sq. Hd. Cap.....65&10¢  
Hex. Hd. Cap.....60&10¢

**Wood—**

Manufacturers' Circular Prices  
List Nov. 10, 1898.  
Flat Head, Iron.....87¢  
Round Head, Iron.....85¢  
Flat Head, Brass.....85¢  
Round Head, Brass.....82¢  
Flat Head, Bronze.....82¢  
Round Head, Bronze.....80¢  
Rogers' Drive Screws.....87¢  
Note—An extra 5 or 10% is often given.

**Scroll Saws—See Saws, Scroll.****Scythes—**

Grass and Grain.....50&10¢

**Scythe Snaths—**

See Snaths, Scythe.

**Seeders—**

Raisin—  
Enterprise.....25&30¢

**Sets—**

Brad Axl and Tool Sets:  
Wood Hdle, 10 Awls, 6 Tools, 1/2 doz. \$3.00  
Wood Hdle, 14 Awls, 8 Tools, 1/2 doz. \$3.25&2.40

Alken's Sets, Awls and Tools:  
No. 20, 1/2 doz. \$10.00, 80&10&80 1/2  
Fray's Adj. Tool Hdls., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9; 5, \$7.....50¢  
Miers' Falls Adj. Tool Hdls., No. 1, \$12; No. 4, \$9; No. 5, \$18.....15&10¢  
Stanley's Excelsior:  
No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50.....40&10&40 1/2

**Garden Tool Sets—**

Ft. Madison Rakes, Shovel and Hoe.....1/2 doz. \$9.00

**Nail—**

Round, assorted.....1/2 gr. \$3.00&3.25  
Octagon.....1/2 gr. \$4.00&4.75  
Buck Brothers.....27¢  
Cannon's Diamond Point, 1/2 gr. \$19.25  
Snell's Corrugated, Cup Pt.....50¢  
Snell's Knurled, Cup Pt.....60¢

**Rivet—**

Regular list.....70&70 1/2

**Saw—**

Alken's Genuine.....1/2 doz. \$4.50&5.00  
Alken's Imitation.....1/2 doz. \$3.00&3.10  
Atkin's Criterion.....1/2 doz. \$3.00  
Atkin's Adjustable.....1/2 doz. \$6.00  
Bemis & Call Co.'s Cross Cut.....30&5¢  
Bemis & Call Co.'s Plate.....20¢  
Bemis & Call Spring Hammer.....30&5¢  
Diston's Star.....25¢&25 1/2  
Hammer, Bemis & Call Co.'s new Pat. 45¢  
Hammer, Seymour, Smith & Son, 1/2 doz. \$4.75  
Morrill's No. 1, \$15.00.....40&20¢  
Nos. 3 and 4, Cross Cut, \$23.00, 40&20¢  
No. 5, Mill, \$31.00.....40&20¢  
No. 10, \$15.00.....40&20¢  
No. 11, \$15.00.....40&20¢  
Stillman.....1/2 doz. \$1.00  
Taintor Positive, 1/2 doz. \$18.....60¢

**Sharpeners, Knife—**

Tanite Mills 1/2 gross, \$14.40.....25&33¢

**Shaves, Spoke—**

Iron.....1/2 doz. \$0.95&1.00  
Wood.....1/2 doz. \$2.25&2.50  
Bailey's (Stanley R. & L. Co.).....50&10¢  
Cincinnati.....25&10¢  
Goodell's, 1/2 doz. \$9.00.....15&10¢  
Stearns'.....40&10¢  
Tatum's.....25&10¢

**Shears—**

Cast Iron, good quality, 1/2 gross, 7-in., \$14; 8-in., \$16; 9-in., \$18.  
Cast Iron, cheaper grade, 1/2 gross.  
7-in., \$8.50; 8-in., \$9; 9-in., \$11.50.  
Acme Cast Shears.....40&40 1/2  
Straight Trimmer, &c.....70&10&75 1/2  
Second quality.....80&10&85¢  
Davenport Outtery Co.....60&60 1/2  
Helmich's Tailors' Shears.....40&40 1/2  
Seymour's, list Dec. '81.....60&10&70 1/2  
Seymour's Nickel.....50&10&50 1/2  
Seymour's Tailors' Shears.....40&40 1/2  
Wilkinson's Hedge.....50¢  
Wilkinson's Sheep.....15¢

**Tinnars' Snips—**

Forged Handles, Steel Blades.....20&10¢  
Malleable Handles, Laid with Steel.....40¢  
Forged Handles, steel Blades, Berlin.....40&10¢  
Niagara Snips.....40¢  
Seymour's.....60&10&10 1/2

**Pruning Shears and Tools—**

Diston's Combined Pruning Hook and Saw, 1/2 doz. \$18.00.....25¢&25 1/2  
Diston's Pruning Hook, 1/2 doz. \$12.00.....25¢&25 1/2  
Eagle Pruning Shears.....60¢  
John T. Henry Mfg. Company.....50&10¢  
Henry's Genuine, Nos. 1, 2 and 22.....50&10¢  
Henry Pattern, No. 20.....50&25¢  
Henry's Pattern, No. 21.....50&30¢  
Conn. Pattern, Nos. 32, 33 and 3, 50&25¢  
Conn. Pattern, No. 4.....50&10¢  
Henry's Orange Shears.....50&10¢  
Henry's Grape Shears.....50&20¢  
Henry's Tree Pruners.....75¢  
Levin Pruner, No. 23, \$9.00 1/2 doz. 45¢  
Levin Pruner, No. 24, \$12.00 1/2 doz. 45¢  
No. 100 Pruning Shear.....60&10¢  
P. S. & W. Co.....60¢  
Seymour's.....60&10&10 1/2

**Seymour Smith & Son:**

Rockdale.....20¢  
New Standard Tree Pruner.....80&5¢  
Others.....65¢  
Telegraph Tree Pruner.....70&5¢  
Waters' Tree Pruner.....80&5¢  
Wheeler, M. & C. Co., Combination, 1/2 doz. \$12.00.....25¢&10&25 1/2

**Sheaves—Sliding Door—**

Stowell's Anti-Friction.....50¢  
Patent Roller.....60&10&60 1/2  
Patent Roller Hatfield's, Sargent's list, 80&10&80 1/2  
Reading.....70&10&75¢  
R. & E.....60&10&10 1/2  
Wrightsville, Hatfield Pattern.....80&10¢

**Sliding Shutter—**

Reading list.....70&10&75¢  
R. & E.....60&10&10 1/2  
Sargent's list.....60&10&10 1/2

**Shells—**

Brass Shot Shells, Club, Rival, Climax, 65&2¢  
Brass Shot Shells, first quality.....60&2¢  
First quality 4, 8, 10 and 12 gauge.....25&10¢  
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge (\$7.50 list).....20&10¢  
Quick Shot, Reinforced New Victor 40&2¢  
Smokeless brand, 12, 10, 16 gauge.....33¢&10¢  
Star, Club, Rival and Climax Brands.....33¢&10¢  
Trap brand 12 and 10 gauge, 33¢&10¢

**Shells, Loaded—**

Loaded with Black Powder.....40&10¢  
Loaded with Nitro Powder.....40&10&10 1/2

**Ship Tools—**

L. & I. J. White.....25¢

**Shoes, Horse, Mule, &c.—**

Burden's, Perkins', Phoenix, Old Dominion, Bryden's Boss Crescen, &c., from jobbers.....\$3.10&3.25  
Bryden's Frog Pressure.....\$4.00  
Gibbs' Rubber Cushioned.....1/2 set, \$1.50

**Shot—**

Drop, up to B 25-b bag.....\$1.40&1.45  
Drop, up to B 5-b bag.....30¢  
Drop, B and larger, 25-b bag, \$1.65&1.70  
Drop, B and larger, 5-b bag.....35¢  
Buck 25-b bag.....\$1.65&1.70  
Buck, 5-b bag.....\$1.65&1.70  
Chilled, 25-b bag.....\$1.65&1.70  
Dust Shot, 25-b bag.....2.00  
Dust Shot, 5-b bag......50  
These prices are often shaded 5&10¢  
25-b bag, especially in the West, and with the rapid advances which have taken place merchants are often in a position to undersell the manufacturers.

**Shovels and Spades—**

No. 2, Polished, Sq. or Rd. Point, D or L Handle:  
Price 1/2 doz.  
A1, B2, 1st Grade, 2d Grade.  
Platn Back.....\$8.10&8.40 \$7.20&7.50  
Strap Back.....7.50&7.80 6.90&6.90  
Cleveland Pat'n 7.80&8.10 6.90&7.20  
C3, D4, 3d Grade, 4th Grade.  
Platn Back.....\$6.30&6.60 \$5.70&6.00  
Strap Back.....5.70&6.00 5.10&5.40  
Cleveland Pat'n 6.00&6.30 5.40&5.70  
All other sizes add 30¢ 1/2 doz.  
Black deduct 30¢ 1/2 doz.

**Shovels and Tongs—**

Brass Head.....60&10&60 1/2  
Iron Head.....60&10&60 1/2

**Sieves and Sifters—**

Buffalo Metallic, S. S. & Co., 1/2 gr.:  
16 16&18 18 18&20  
Blued.....\$10.80 \$11.40 \$11.40 \$12.00  
Tinned.....11.40 12.00 12.00 12.60  
Eclipse.....1/2 gr. \$3.00&3.00  
Hunter's Genuine.....1/2 gr. \$9.50&10.00  
Hunter's Imitation.....1/2 gr. \$5.50&5.90  
Shaker (Barber's Pat.) Flour Sifters, 1/2 doz., \$2.00.....25¢

**Sieves, Wooden Rim—**

Mesh 18, Nested, 1/2 doz. \$0.70 \$0.85  
Mesh 20, Nested, 1/2 doz. .90 1.05  
Mesh 24, Nested, 1/2 doz. 1.05 1.20

**Sinks—**

Cast Iron—  
According to list.....70&10&80 1/2

**Wrought Steel—**

Columbus Galv'd and Enameld.....50&10¢  
Columbia, Painted.....30&10¢  
L. & G.....50&10¢





Entered at the Post Office, New York, as Second-class Matter.

